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(The Journal of The All-India Veterinary Association)

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Editor :

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devoted to the cause of the Veterinary Profession.

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MR. V. R. PHADKE, G.B.V.C., J.P.

Principal, Bombay Veterinary College.

MR RAM LAL KAURA, L.V.P. (Hons),

The First Indian to obtain B.V.Sc., V.S.,

Degree of Toronto University.

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Editorials.

VETERINARY RESEARCH.

At last the need for Veterinary Research seems to have dawned on the minds of those that guide the destinies of the Veterinary Departments of this country. In a tropical country like India, the field for original disease research in animals is enormous, but the steps taken to accomplish the object are not commensurate with the needs. For a long time there was only one institute up on the hills in the north of this huge sub-continent. Later on a few small Laboratories sprang up in the respective Veterinary Colleges, and these were used more to aid the clinics than for Research. The idea was, and perhaps still, is, to centralise work in Research, and this idea of centralising Research work, either Veterinary or Medical is not commendable for obvious reasons.

Of late, in the Laboratories attached to each Veterinary College, some amount of Research work is being done. Even here the tendency to man them *inadequately* and to give less facilities under some pretext or other exists. By centralising Research at some one Institute and making the rest of the Laboratories subsidiary is, in our opinion, an unsound policy. On the one hand, however large the staff of this centre may be, it is bound to find more work than it can do efficiently and the net result, naturally, falls short of the expectations: on the other hand this centralisation indirectly means to imply that no other brains, bar those obtaining within the central place, are capable of thinking out problems for themselves and that the rest outside should look up to that central body for guidance; or it may mean to imply that Research is kept as a close preserve only for those that possess the so-called "higher training," even though such persons come out to India fresh from a College not knowing anything about the diseases of animals peculiar to the Tropics. Given the same opportunity to many a young Veterinary Graduate of any

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Indian Veterinary College, he is ready to specialise in any particular branch of Research. Such men were neglected in the past and we feel glad to see that many of them are now going abroad to study particular branches of Science in order to fulfil the considerations of Services.

There are still many who have the capacity for Research work but do not possess the wherewithal to go abroad. Research in animal diseases should not be restricted to any particular class of animals. Veterinarians have to deal with all the animals of a farmer or a stock-owner whether that animal is of any economic value or not. It therefore stands to reason that Research in the diseases of Cattle or Dogs or Poultry is equally important. It may be that any particular piece of Research done is only of Academic interest, but it should not be forgotten that this piece of work may give a clue for another of economic value. To draw a parallel—"Pure" Mathematics came into being before "applied" Mathematics came into existence. Similarly Research of Academic interest preceded that of economic value. That classical work on Malaria by Sir Ronald Ross was first done on Bird Malaria and then applied to solve the life cycle of Human Malaria. The birds with which he worked were of no economic value, yet that glorious work brought a blessing to humanity in general. In the face of all this the Government of one of the Provinces in India has passed an order that no Research is to be undertaken unless it be in diseases of indigenous animals of economic value. We infer from this that a dog for example should be considered an animal of no economic value and its disease needs no attention. We respectfully point out that "Rabies" of the dog is of very great importance, so is Hydatid disease and many others. Should no Research be done in these by Veterinarians who are better fitted for it more than the Medical men who are permitted to do the same? We do not blame the Government of the Province for issuing such an order because a Government is a body of laymen guided by an "Expert" who is a tried and experienced man of the profession! We mean no ill will to anybody but a spade has to be called a spade. It is time now that such an order is rescinded.

Neither this country nor any other could exist without its Livestock and it is a pity that every year so much pecuniary loss is sustained by the stock-owners. This avoidable pecuniary loss would support a number of Research Institutes. Research should be decentralised and each province should work out its local problems. State-aid in these matters is necessary and Private-aid, if available, is commendable and can be looked upon as only an adjunct to the former.

In countries other than India men that show an aptitude for Research are encouraged with the necessary help, but here conditions are different. It is gratifying, however, to note that the Agricultural Research Council has created a post in each of the major Provinces for the investigation of Cattle Diseases, but it seems to us that such of those that are employed may have to submerge their individuality into some central body in order to be spoonfed. We have enough men who possess the brains for Research work and these are only waiting for an opportunity to use them—encourage them, give them their individuality and thus get the best of the local talents of the provinces.

DEVELOPMENT INDEED !

II

Having pointed out in a previous article that the word 'Development' would be a misnomer as applied to the Veterinary Department if the highly retrograde proposals of the Retrenchment committee in Madras were given effect to, it is our intention now to deal with two other vital questions, which demand the serious and immediate attention of all Local Goverments, if they mean 'business' with the veterinary profession in India.

Time and again we have pointed out in these pages that the question of Veterinary Education in India should be taken up immediately and with the materials and facilities available in a 'Sub-Continent' like India, it must be possible to make her self-contained in the matter of Veterinary Education. We are unable to understand what it is that exactly stands in the way of higher authorities to move in the matter. Finance? well, it is an old, old bogey which has lost its point. It is sickening to hear it said in season and out of season. What is more pitiable is that the heads of various provincial veterinary departments in India seem to be more anxious about the finances of the Government than the Govement themselves. It may do credit to them as Servants of the Government but not as Heads of Scientific Departments. The old adage "Where there is a will there is a way" has not lost its truth because of its age. We submit that a move in the matter is long overdue and lest our criticisims should be lacking in any constructive proposals, we place the following points for the consideration of the authorities concerned:—

1. The curriculum of studies should be the same in all the the Veterinary Colleges in India.
2. The entrance qualification should be Intermediate in Science or some other equivalent University Examination.

3. The Course of Instructions should be raised to four years or if the three years' course is to be retained, the non-technical subjects such as, Chemistry and Biology, may be omitted from the College curriculum. Only those candidates who have taken these subjects for their Intermediate Examination be eligible for admission.

4. The examination in all the Colleges in India should be conducted by a Central Board of Examiners, consisting of Principals of all Veterinary Colleges appointed by the Government of India, who can set papers for a simultaneous written examination.

   The Oral and Practical examinations can be conducted by the Principal and staff of the College concerned. This arrangement will in no way interfere with the efficiency of the examination, as the Oral and Practical tests will be conducted on the questions set and approved by the Central Board.

5. Diploma of Licentiate in Veterinary Science (L.V.S.) be awarded to the successful candidates in the final examination to enhance the status.

6. The question of affiliation to the University, may be left to the Provinces, but no candidate shall proceed to any University Degree in Veterinary Science, unless he has previously obtained the Diploma of Licentiate from one of the Veterinary Colleges in India or from any other recognised Veterinary Colleges. A still simpler and direct method would be to affiliate the Provincial Veterinary Colleges to their respective Universities and insist upon necessary standard and safeguards as in the case of sister professions of Medicine and Agriculture.

7. The system of free Veterinary Education be done away with. An uniform tution fee of not exceeding Rs. 100/- per annum and Examination fee of Rs. 5/- per head, for the 1st and 2nd year and of Rs. 10/- for the Final year may be levied.

8. The Local Governments may at their discretion award stipends or scholarships to selected students.

9. Facilities for ' Refresher Course ' must be provided in all the Veterinary Colleges.

We have indicated roughly on what lines development may be desirable in the matter of Veterinary Education in India. It is for the

'Experts' to fill in the details, and make it a comprehensive scheme. We next proceed with the question of improvement of Live-Stock. We have written in great detail on this subject in the January issue of 1926. It is a piece of grave injustice that the profession is subjected to, in not being entrusted with this work. Hissar Farm stands as a monument to show what success Cattle-breeding Operations can attain *in the hands of Veterinary profession.* With its thorough knowledge of animal Physiology, Pathology, Anatomy, Veterinary Hygiene, Soundness of animals, their care and management, their habits and idiosyncracies and knowledge of breeding, it is the best suited to be in charge of Cattle-breeding Operations. Let us see what is exactly happening on the several Cattle Farms now run by the Government. We make no excuse in quoting from our previous article with slight alterations and additions.

"If a cow presents difficulty in calving a Veterinary Surgeon is needed: if either the mother or her little one suffers least constitutionally, it is the Veterinary Surgeon that must set them right; if they do not 'thrive' well the Veterinary Surgeon is expected to make 'elephants' of them; if an epidemic breaks out on the Farm the Veterinary Surgeon is held solely responsible to put an early end to it; if the Farm stock are to be protected annually against diseases like Rinderpest Hæmorrhagic Septicæmia, Black quarter, Anthrax, Sheep-pox, &c., it is the Veterinary Surgeon that has to do all the inoculations; Deficiency diseases must be attended to by him. Any irregularity in oestrum, conception, gestation, &c., must be set right by the Veterinary Surgeon; if unwanted bulls are to be castrated, it is the Surgeon's knife that ought to accomplish it; no animal can be brought into the Farm or sent out of it, without his examination and certificate of fitness; in fine, no phase of work of any Live-stock Farm can go on without the aid of Veterinary Surgeon. Why then is he incapable to undertake Live-Stock improvement work? Is it in his care and management of animals when they are healthy or is it in his capacity to indulge in experiments of improving the breeds and increasing the milk supply? Oh! the irony of it.

We fear we have laboured unnecessarily to drive home a point that can be seen and appreciated easily by any layman. But what is strange is, that a discerning Government should be a party for such grave injustice in the history of official service in India. The question needs complete examination at the hands of experts at an early date.

THE MADRAS SERUM INTSTITUTE.

Amongst the Provinces in British India, the credit of opening a first Provincial Serum Institute goes to Madras. It is as much to the credit of the people of the Province, whose representatives in the Legislative Council kept up incessant agitation for the opening of the Institute, as it is to the profession and its head in that part of India, who have created the demand for it. We have ourselves cried hoarse over this question, times without number, in these pages. We are glad any way that it is an accomplished fact now. Our hearty congratulations to all concerned.

Knowing Madras as well as we do, we venture to state that the Institute is bound to be a success. It is fortunate that an Officer of the type of Mr. K. Kylasam Ayyar, who combines in himself plenty of tact, resourcefulness, aptitude for silent and solid work and valuable experience both in the Field and the Laboratory, is to direct the working of the Institute. We only wish to remind him of the fact that all eyes are on Madras now. He has been entrusted with a work of great magnitude and unless he is given all facilities, he will be much handicapped.

The Institute will no doubt concern itself immediately with the manufacture of Anti-Rinderpest Serum and meet the demands of the Presidency of Madras, at least—for the present. Before long, it must be possible to supply the adjacent Provinces and Indian states with all the Serum required by them. It will be to the mutual good of these Provinees. They will be able to get their supply quicker and perhaps to the full extent of their requirements. The work of production of Rinderpest Virus has already been in existence for over four years now and the demand for it is also bound to increase.

The Institute will soon have to take up the production of various other Vaccines and Sera with regard to diseases like Anthrax, Hæmorrhagic Septicæmia, Black-Quarter, Tetanus, Fowl-Cholera, Pseudo-Fowl-pest, Sheep-pox, etc. The day may not be far off when the Institute will have to play a great part in the prevention and cure of diseases of Live-Stock of this country. Everything ought to be done with an eye on the *future* and not merely meet the demands of the *immediate present.*

There is a lot to be done with regard to Rinderpest itself. For it must not be forgotten that other countries have gone far beyond the stage of mere production of Serum. There are several problems pertaining to Rinderpert still awaiting to be elucidated and it is hoped that this Institute in course of time will tackle some of the more important problems connected with the disease.

Well, we are glad that the Government of Madras have opened such a useful Institute and we feel certain that the names of the Hon'ble Mr. P. T. Rajan, the Minister for development and of Mr. P. T. Saunders, Director of Veterinary Services, will ever be intertwined with the Institute. We wish the Institute every success.

KENELM HEWLETT, O.B.E., M.R.C.V.S., I.V.S.

AN APPRECIATION.

(BY V. R. P.)

Mr. K. Hewlett born on the 15th September 1876, was educated at Bedford School and qualified as a Member of the Royal College of Veterinary Surgeons in July 1900. He joined the Indian Veterinary Service in March 1902 and was posted to Punjab Veterinary Department. He was transferred to Bombay as Assistant Principal of the Bombay Veterinary College on 22nd December 1902.

In May 1905, he was appointed as Superintendent, C.V.D., Poona, and on the death of Col. Joslen was appointed as Principal of the Bombay Veterinary College on 27th of June 1910 and this appointment he held till his retirement on 31st of March 1932. Thus it will be observed that he was connected with the Institution for nearly 22 years, a record unparalleled in the history of any of the Veterinary Colleges in India. His valuable services during the Great War as Embarkation Veterinary Officer from January 1915 to December 1919, have been recognised by the Government of India and he was appointed Officer of the Most Excellent Order of the British Empire in June 1919.

He is the author of "Breeds of Indian Cattle—Bombay Presidency". The greater part of the present cadre of the Bombay C.V.D. was trained by him and during the 22 years of his service he has been a teacher, a trainer, a preceptor, in short the father of the C.V.D., because it was he, who organised the C. V. D. as Superintendent, During his tenure of Office at the college, the new Lazaretto has been built. The hospital has been improved by the addition of new horse ward, the dog ward, the operation theatre, etc.

Since the war and since the reforms the financial stringency has pressed heavily upon the College so hard that none of the many new schemes put forward by him for the expansion, development and improvement of the college has been sanctioned. The new Laboratory so badly needed has not been provided.

Mr. Hewlett as a Principal of the College has been a good administrator and was a strict disciplinarian. As an Officer with a towering personality he has been honest and straightforward in his dealings. He has been known to be very kind to his students and as an Examiner quite sympathetic and just. He was always quick in his judgment and the steps he took were always decisive and he never wavered. He was always sincere in his advice and a lover of truth.

He has now retired after a long and approved service of 30 years. We wish him long life to enjoy his well earned pension and rest, in the midst of his family.

THE FIRST INDIAN PRINCIPAL.

Mr. V. R. Phadke, G. B. V. C., J. P.,

We hasten to offer our hearty congratulations to Mr. Phadke on his appointment as the permanent Principal of the Bombay Veterinary College, on the retirement of Mr. Hewlett. A short sketch of his career is published in this issue elsewhere by a Graduate of the Bombay Veterinary College. "Some are born great, some acquire greatness, while, on some, greatness is thrust." Mr. Phadke comes under the second category of the great poet. He has not attained his present position through dubious methods and means. It was a straight fight. He worked hard to deserve it. Service at Muktesar, Post-graduate training in England, War Service, Work throughout India, Long and laborious and efficient service at the Bombay Veterinary College are all to his credit. He did not rise like a rocket; but through sustained efforts and meritorious service he has risen to his present pinnacle.

May he be blessed with long life to serve his profession and his country.

Obituary.

Mr. R. Town.

His numerous old students scattered all over India and outside will feel sorry to know that Farrier Seargent R. Town, late of Royal Horse Artillery and retired Farrier Instructor in the Bombay Veterinary College, died in the early hours of the 24th June 1932, in the British Station Hospital, Bangalore at the ripe old age of 81 years. Having served in the Military Department for over 20 years he retired from the Army and took up the post of Instructor in Practical Shoeing in the Bombay Veterinary College, where, during his stay of over 23 years he had built up a very lucrative business in hot shoeing. He had hardly any rival in this business in this country. His students and others who came in contact with him knew him as a regular, kind-hearted, hard-working and ideal instructor with pucca business habits and they held him in high esteem. Throughout his stay in Bombay, he was a familiar figure among the visitors to the

Colaba Band Stand having his regular evening drives in the company of Mrs. Town, in his own well maintained coach.

He retired from the Bombay Veterinary College in the year 1922 on a civil pension. For some time he had settled down in the Anglo Indian Colony of White-field near Bangalore, and later on in Bangalore C. & M. Station, purchasing a bungalow on the Nandidroog Road at Benson Town. He was known for his sympathy to the poor and for his philanthrophy towards all deserving causes in the surroundings. The funeral took place on the 24th evening with due military honours.

The late Mr. Town leaves behind him his widow and a large circle of friends to bemoan his loss.

Original Articles.

A SCHEME FOR THE STUDY OF THE EPIZOOTIC DISEASES.

BY

D. C. MATHESON, F. R. C. V. S., D. V S. M., (VICT.)

Professor of Pathology and Bacteriology, Royal (Dick.) Veterinary College, Edinburgh.

In recent issues of the *Indian Veterinary Journal,* the present writer has set forth a series of questions designed to assist the student of the subjects indicated in the arrangement of the available information and in the examination of specimen illustrating the conditions studied.

The present article contains a further series of questions more particularly applicable to those diseases which are the subject of administrative action in some countries.

The questions for example may be applied to Cattle Plague (Rinderpest), Foot and Mouth Disease, Etc : Etc :

What are the characters of this disease ?
What is the cause of this disease ?
What animals does this disease affect ?
How is this disease transmitted ?
How may this disease be recognised ?

(1) Incubation period.
(2) Symptoms.
(3) Lesions.
  (*a*) Macroscopical.
  (*b*) Microscopical.
(4) Tests.
(5) Material to be sent to the Laboratory for diagnosis.

What is known with regard to the tenacity of life of the virus?

Can the virus be cultivated: if so briefly state the method or methods used for the purpose?

What biological methods are available for the control of the disease?

What administrative measures are in force in connection with this disease?

Epitomise the existing Acts and Orders etc. in connection with this disease.

LARVÆ OF POROCEPHALUS SPECIES IN THE MUSCLE OF A FRESH WATER FISH.

BY

M. ANANT NARAYAN RAO,

Lecturer in Parasitology, Madras Veterinary College.

AND

S. VAIDYNATHA MUDALIAR

Assistant Lecturer, Madras Veterinary College.

A piece of muscle from a fresh-water fish was sent here by the Veterinary Assistant Surgeon, Somwarpet, Coorg, when he found these worms in it. They were found to be larvæ of a species of Porocephalus. The larvæ were encysted in the muscle and were of a creamy white colour. There is no definite separation between the cephalothorax and body. The length of each is 5. 84 mm. and the breadth 0. 87 mm. The whole worm has about 85 segments, the posterior ones being narrower than the anterior ones. In the middle of each segment there is a ridge running round it bearing fine spines about 180 in number. The spines are directed backwards. The short round blunt "head" is convex dorsally and almost flat ventrally. There is an oral opening about 0. 03 mm from the anterior end, which measures 0. 16 x 08 mm. It is surrounded by chitinous rim. On either side of the oral opening there are two pairs of powerful hooks—one pair can be called the anterior and the other one posterior. The anterior pair of hooks are slightly smaller than the posterior ones. The length of the anterior hook is about 0.35 mm. and that of the posterior 0.38 mm. The handle of each hook seems to be a strong piece of chitin rolled on itself and ending in a slightly curved uniform appendage and a strongly curved hook with a somewhat lancet-shaped guard.

We are not aware if any such larvæ have been reported from Fresh-water Fish, in this Presidency, hence this paper.

Porocephalus Species in the Muscle of a Fresh-Water Fish.

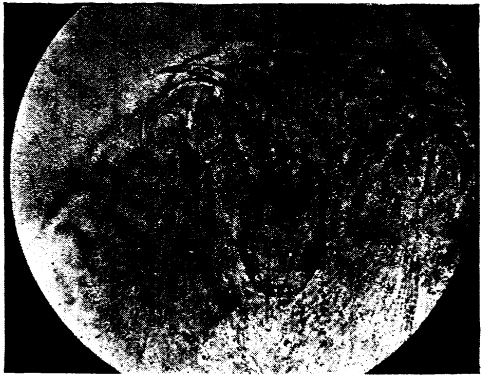


Photo Micrograph of a portion of the head.

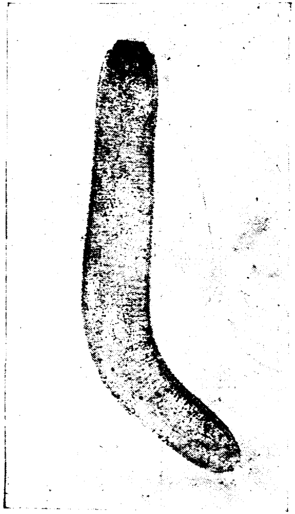
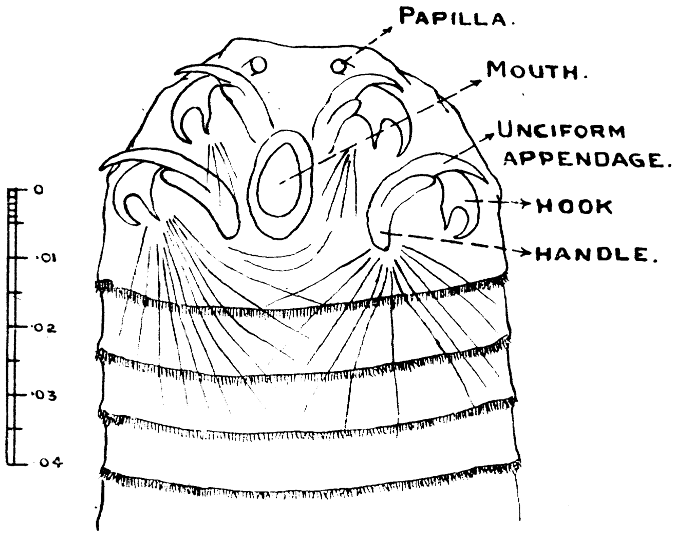
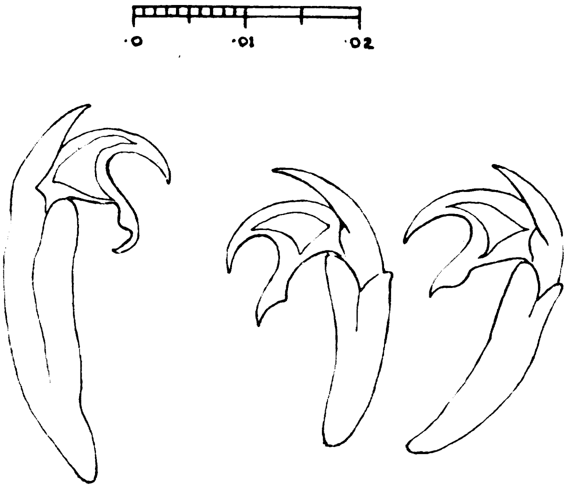


Photo Micrograph of Entire Larva.

Porocephalus Species in the Muscle of a Fresh-Water Fish.



HEAD.



HOOKS.

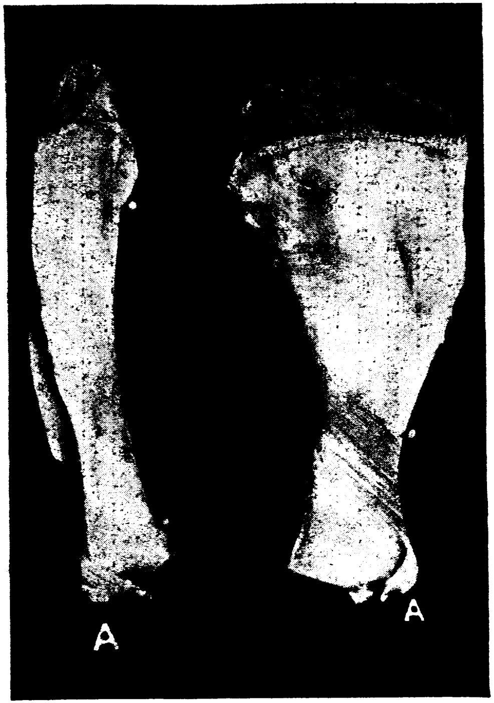


PLATE I

A : Coracoid Process.

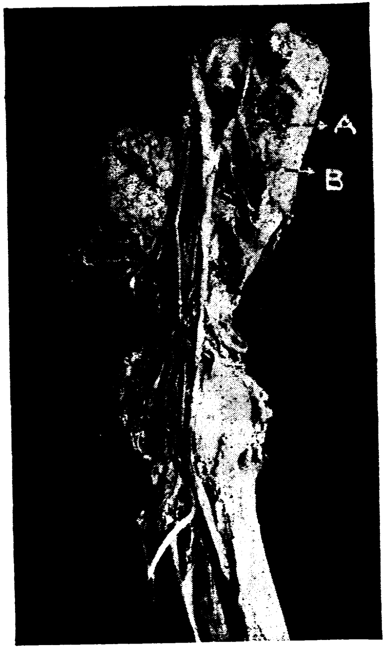


PLATE II

A : Nerve to Coraco-humeralis and biceps.

B : Independent to coraco-humeralis.

Anatomical Section.

SOME PECULIAR ANATOMICAL FINDINGS IN THE HORSE.

BY

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During the course of my dissections on the horse from 1917 to 1930, I had occasion to meet with certain peculiar anatomical findings which have neither been normally met with nor heitherto recorded and I therefore thought it worth while to record them in the present note.

1. *Undue development of the nodule on the Coracoid process of the scapula* :—In most of the animals (horse) the area of the coracoid process of the scapula from which the coraco-humeralis originates is only in the form of a small nodule and Sisson has observed that this nodule in exceptional cases shows an undue development and then is in the form of a large process measuring an inch or more (2½-3 cm.)

During my observations, I have come across two cases (horse) in which both sides scapulae showed undue development of these nodules and measurements of these were found to be even greater than the ones recorded by Sisson (1½-2 inches)—(*Plate I*).

2. *An independent nerve to Coraco-humeralis* :—Usually, the erve supply to the biceps and coraco-humeralis is from a common source " the nerve to biceps and coraco-humeralis" (a branch given off from the median either from its anterior root or from the united nerve) which after supplying the coraco-humeralis terminates in the biceps.

In 17 cases (dissection subjects-horse), the nerves to biceps and coraco-humeralis were independent of each other both arising from the median one below the other (*Plate II*).

Note :—In cases where the " nerve to biceps and coraco humeralis" was detached from the united nerve, the new branch that I have referred to also came off from the united nerve about an inch below the " nerve to biceps and coraco-humeralis." In cases where this branch common to the biceps and coraco-humeralis came off from the anterior root of the median, the new branch referred to by me also came off from the anterior root about an inch below the common " nerve to biceps and coraco-humeralis."

3. *Nerve to Levator anguli scapuli and Rhomboideus* :—Though this nerve has been mentioned in the text-books as one among the branches of the brachial plexus, the fibres of this nerve have nothing to do with this plexus, in as much as they are derived from the inferior primary branches of the sixth cervical nerve. These fibres are then disposed off in two branches Anterior and Posterior and these two branches pierce the upper border of the scalenus. The anterior then places itself entirely in the levator anguli scapuli while the posterior not only supplies this muscle but runs up in this muscle to terminate in the rhomboideus.

(*a*) In one of the subjects (horse) dissected by me on 11-2-27, the anterior branch like the posterior one was also found terminating in the rhomboideus. Besides the branches of the sixth nerve, a branch from the fifth cervical nerve was also found supplying and terminating in the leavtor anguli scapuli in this subject.

(*b*) In another subject (horse) dissected on 30-1-30, I found the anterior and posterior branches derived from the sixth cervical nerve showing the usual behaviour. But the peculiarity met with in this subject was, that besides the branches derived from the sixth nerve, the seventh cervical nerve gave a branch which emerging after piercing the upper border of the scalenus, divided itself into three branches—Anterior, Middle and Posterior. (*Plate III*).

The anterior and the middle branches when traced were found going upwards placing themselves deeply in the levator anguli scapuli, detaching branches to it in their upward course and both finally terminating in the rhomboideus. The third—the posterior branch placed itself in the levator anguli scapuli and gave off in its turn a *First* branch which spent itself purely in the levator anguli scapuli and a *Second* branch which became a common "nerve to levator anguli scapuli and serratus magnus." This posterior division after furnishing these two branches ran backwards and joined a branch coming from the eighth nerve thus giving rise to the formation of the "nerve to serratus magnus".

My thanks are due to Dr. O. Charnock Bradley, M.D., D.SC., M.R.C.V.S., Principal, Royal Dick (Veterinary College, Edinburgh, who has been kind enough to peruse the notes and the photographs and expressed that the findings are interesting.

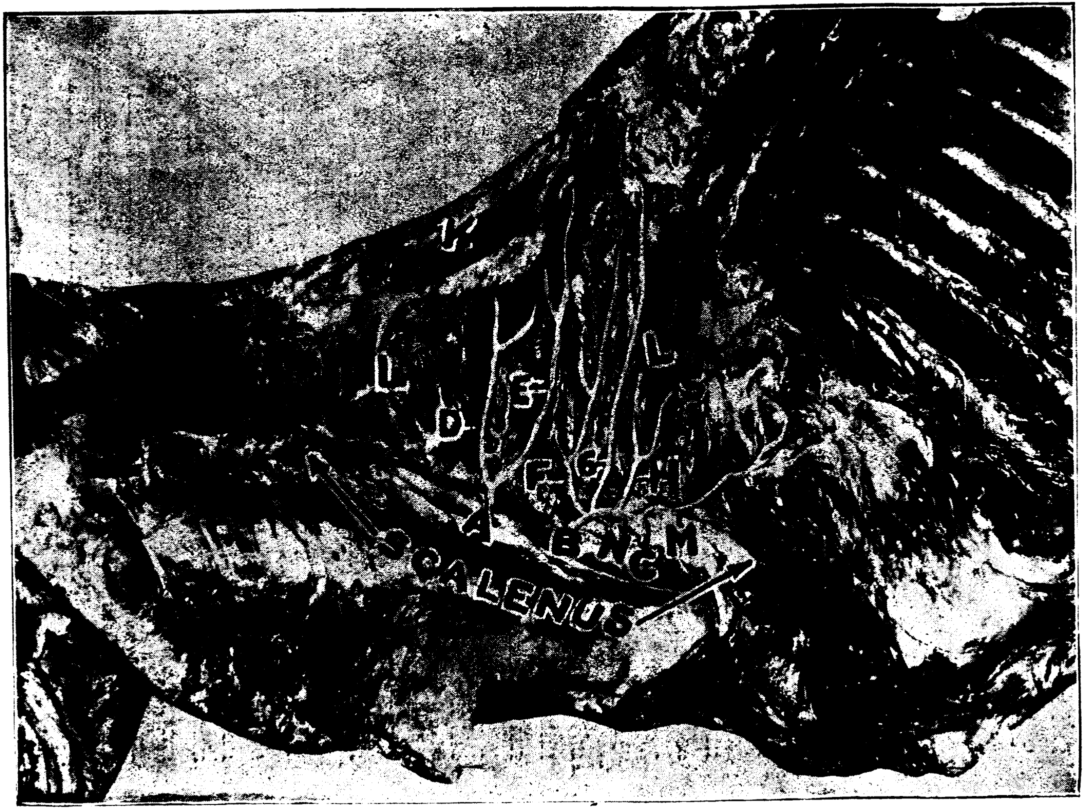

PLATE III.

KEY TO PLATE III.

A : branch of the sixth cervical nerve.

B : branch of the seventh nerve.

C : branch of the eighth nerve.

D : anterior branch of A.

E : posterior branch of A.

F. G. & H : anterior, middle and posterior branches of B.

N : backward continuation of H joining C to form the nerve to serratus magnus—M.

K : rhomboideus.

L to L' : levator anguli scapuli.

S : anteriormost part of serratus magnus.

M : nerve to serratus magnus.

General Articles.

RINDERPEST IN CAMELS.

BY

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Leese in his book entitled "A Treatise on the One-Humped Camel in Health and in Disease" mentions that he has neither seen nor heard of Rinderpest in camels. Rayment with his experience of Rinderpest in cattle used for transport on the North-West Frontier, also notes how the camels were never found affected with the disease. D. Hutcheon (Journ of Comp. Pathology Vol. 15 p 4) notes that Dr. Koch failed to communicate Rinderpest experimentally to camels. Lingard however succeeded in giving Rinderpest to camels experimentally. Cross has also succeeded experimentally, in infecting camels with Rinderpest. From his experiment he concludes that the camels were more susceptible to Rinderpest than two calves 11 months old which he used in his experiment. Tartakowsky states that camels are only slightly susceptible and very seldom die of the disease.

During recent wide-spread outbreaks of Rinderpest in cattle and buffaloes, in Hyderabad-Sind and Karachi districts several natural outbreaks of Rinderpest in camels have been reported by the Veterinary Assistant Surgeons. I have had an occasion of dealing with such an outbreak. It has been observed that these outbreaks occur in areas where the disease assumes a virulent form in cattle and buffaloes and remains persistent there for some months. The disease affects young camels as well as adults.

The following symptoms have been observed in camels suffering from Rinderpest :—

High fever 104° to 105° F. ; suspension of rumination ; loss of appetite ; watery discharge from eyes ; great prostration and dullness ; shooting foetid diarrhoea in some cases mixed with blood and mucus ; vesicles on lips, dental pad and tongue which finally become ulcers ; foul stinking smell from the mouth ; mortality from 20 to 40 %.

Treatment :—Intravenous injections of Iodine in one per cent. solution in doses varying from 75 c.c. for the young and 150 c.c. for the adults supplemented with Permanganate of Potash by the mouth have been tried with marked success.

As I find no mention of natural outbreaks of Rinderpest in camels, this article might interest the readers of this journal.

DISEASES OF HUMAN BEINGS CARRIED BY MILK.*

BY

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The part that milk plays in the history of human food is unique. Considering its usefulness, the milk—the pure wholsome milk is a blend of highly concentrated food, containing all the body sustaining elements and vitamins. Although it is a food more intended for young children, nevertheless the benefits of its use to adults and sick are unparalleled. Yet, milk, like no other food, has more serious and greater disadvantages over all other foods in that it serves as a most favourable channel in carrying bacterial as well as non-bacterial diseases to mankind—" the more exquisite the rose is, the more fierce are the thorns under it."

There are five sources from which ills attributed to milk may be derived, viz: 1 Diseased animals, 2. Subsequent contamination of the milk with disease germs both of human and animal origins, 3. Change of food and chemical substances, 4. Decomposed or sour milk. 5. milk deficient in nutritive properties.

1. *Diseased Animals*, such as our common milk supplying creatures, are subject to several infectious diseases which may be passed to man through milk supply.

That such diseases are communicable to man could be traced back to dim old ages. History tells us that wise men of ancient time forbade people to come in contact with animals believed to be sick without of course knowing the real cause or nature of the sickness. But at the present time in the light of science and research we have made great strides in the field of our knowledge, that we know not only the causes and nature of the afflictions, but also the method of bringing under control such diseases to a great extent.

Disease producing agents which pass into the milk are either through the blood of the animal directly or from the local affections of the udder, or they may reach the milk through subsequent contamination of the milk with excretions from animals.

The diseases therefore which are communicable in this way are: (a) Tuberculosis (bovine), (b) Foot and Mouth Disease, (c) Anthrax,

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* This essay was awarded the first prize in the competition held by the Far Eastern Veterinary Medical Association, 1931.

(d) Cow-pox, (e) Rabies, (f) Undulant fever, (g) Milk Sickness, (h) Food or Ptomain poisoning, (i) Septic or Epidemic Sore Throat, (j) Scarlet Fever and (k) Diphtheria.

(*a*) *Tuberculosis* is by far the most important animal disease of our day and incidentally the most dangerous, as it plays havoc on the life of man through infected milk of tuberculous animals.

Robert Koch had his doubts whether bovine tubercle bacilli had any effect on man, although it was he who first insolated the organism in the tuberculous animals. Other scientists too had doubts like him, but Revenel in 1901, demonstrated definitely that bovine tubercle bacilli are pathogenic to man, especially in early years of life. The susceptibility which children seem to possess to bovine tuberculosis, is on account of their consuming more milk than adults.

Out of 111 cases of bovine infections found by Park, 101 were in children under 16 years of age and 10 only were in adults.

Infection of the milk with T. B, may mostly occur directly when an animal is affected with tuberculous mastitis, or indirectly when the udder is contaminated with cow's dung in pulmonary or intestinal tuberculosis, urine or vaginal secretions, or uterine tuberclosis or with tubercle bacilli which are brushed off from the soiled udder into the drawn milk by careless milkmen.

Various forms of tuberculosis may be shown by persons who consume milk with the bacilli, such as, abdominal, pulmonary, of cervical glands, tonsils, bones and joints and meninges. Recent statement by Sir Rt. Jones testifies that more than half the cases of tuberculosis of the joints in England were due to the direct poisoning of milk by the bovine type of tubercle bacillus, and as for ulcerative pulmonary tuberculosis in several cases studied by Stanley, no other type of T. B. was found, out of a total of 21 persons who have been found in Great Britain excreting bovine T. B., with the sputum. Careful inquiries into the family histories proved that the cases were due to drinking considerable amount of raw cow's milk.

(b) *Foot and mouth disease* is communicable to human beings through milk containing living virus of the disease. Extensive experiments and observations made from time to time clear all doubts as to the fact.

Infection of milk takes place when udder is affected particularly, but saliva may also be responsible in good many cases. When disease manifests itself, symptoms are analogous to those in animals, i.e., they may show vesicles and ulcers in the mucous membrane with fever. General symptoms may develop with possible vesicles and ulcers on the hands, arms, breast, lips, ears and in the throat. Vomition and diarrhoea may at times be associated with symptoms of gastro-enteritis. In a few cases affection may terminate in death.

(c) *Anthrax* could be carried by milk from an infected animal to man, milk getting its infection either directly from an affected cow or indirectly via man handling the milk. So far there is only one case on record that anthrax was conveyed to a child who drank milk from an affected cow.

The malady seems rare on account of the scanty or no flow of milk in diseased animals.

(d) *Cow-pox.* As evidenced from "vaccine", milk containing virus of cow-pox may carry the contagion to man, producing a very mild type of small-pox. Jensen states that exanthema may develop on the face of a person after ingesting infected raw milk.

(e) *Rabies* virus in milk obtained from rabid animals is shown by Nocard and Bardach and that infectivity to man using such milk is acknowledged ever since. The possibility of causing the disease in man is not by ingesting the affected milk but through abrasions on lips or along the alimentary canal. A milk-man may easily contract the disease during milking a rabid cow, if he has a cut on his hand.

(f) *Undulant fever* in man, in one way is caused by ingesting either goat's milk or cow's milk containing the infectious organisms Brucella *melitensis*:and Brucella *abortus* respectively. It is only a common term indiscriminately applied to both "Malta fever and Contagious abortion", former being the complaint primarily in goats and the latter in cows, although it may be vice versa.

The disease when set up in man is considered serious on account of the disease being of a long duration and subsequent complications. It is supposed to be occurring more in adults (men), rather than in children and women according to Miss Evans, who has considerable opportunities to study the disease.

(g) *Milk sickness* in man is caused by the ingestion of milk from cattle affected with what is called "Trembles". The sickness is not a bacterial one, but it is due to the cattle grazing on some poisonous plants viz: the White snake root-plant and the Rayless golden rod or Jimmy weed. The cause of the sickness has been studied since 1926, by Couch who states, that the chemical substance, "Trematol" found in the two poisonous plants is responsible for Trembles in cattle.

(h) *Food or ptomain poisoning* is observed to be occurring in men after ingesting milk containing particular organisms of Salmonella group, which may be found in Septic and Pyaemic diseases of cattle, such as Septic Metritis, Hæmorrhagic or Ichorous Enteritis or the retention of putrid after-birth. A cow suffering from any of these complaints may prove to be the direct source of infecting the milk or infected hands may be another source. According to Ernst and Hull there are many instances on record where people became sick after drinking milk from such affected cows, due to toxemia caused by specific bacterial toxins.

(i) *Septic Sore Throat* is one of the most important of milk-borne diseases, caused by a special variety of Haemolytic Streptococcus, known as "Streptococcus *epidemicus*." It is a dangerous disease and may cause a number of deaths in a big outbreak. In recent years extensive epidemics have been reported and all have been milk-borne. Out of a population of 4,050 in Lee, Massachusetts, about 1,000 people were affected in the great epidemic of 1928, through milk supply.

The origin of the disease may be from the animal harbouring the specific organism in its udder, as often is the case, or it may be from a dairy workman who has it and may discharge the germs into the milk. It is said that ordinary bovine streptococci found in Mastitis will not cause septic sore throat in man, but all the same it may cause severe gastso-intestinal catarrh after drinking milk from cows affected with streptococcic mastitis, according to Mohler, Eichhorn and Jensen.

(j) *Scarlet Fever* is caused, in a way, by ingesting milk containing Streptococci *scarlatinæ*, which gain access into the milk either directly from the infected udder or from the usual outside sources. Milk coming from infected udders has been particularly observed to be more dangerous and the outbreaks are more severe, than the milk obtaining its infection outside the udder.

(k) *Diphtheria* is primarily a disease of man caused by Bacillus *diphtheriæ*, but rarely the disease germs find their way into the ulcers and sores on the teats of cows through the agency of affected persons, of course, and as a result, cows are involved in Diphtheria epidemics. In most cases milk gets the infection outside the udder, by human contamination, infected water, flies, etc.

2. *Subsequent contamination of the Milk with Disease Germs both of Human and Animal origins.* The manner in which the milk is handled at times and the subsequent contamination which exists between the period of milking and the final consumption of the milk are very complicated. Milk being a natural culture medium is a food as good for bacteria as it is for children and disease germs may freely multiply on gaining access into it. Sources through which they gain entrance are :—During milking, from the outside of the udder and coat of the animal, from the hands and clothing of the milkers, from insanitary mechanical means, if used any, from affected persons working on the farm or from healthy bacilli carriers, from the dust of infected soil or stable or milking room, from flies, bottles and other

utensils or from infected material, as for instance, polluted water used in washing the utensils or as an adulterant, during transportation or while in the hands of milk dealers. Contamination may take place in the consumers' home itself, while often dairymen are blamed when there is any trouble.

Again, two more animal diseases which could be transmitted to man after subsequent contamination of the milk are Glanders and Poliomyelitis.

As neither Glanders nor Poliomyelitis are cattle diseases, the infection may reach the milk through an attendant who happens to be the same person to handle both the milk as well as the diseased animals which may have been stabled in the same cow-shed or in the Dairy yard. Glanders may otherwise be carried through infected dust.

3. *Change of Food and Chemical Substances.* It is a well known fact that food consumed by a milking animal is very material in the production of milk, as it often affects its quality. If a cow is fed on green stuff after having had a course of dry fodder for some time, there will be looseness of bowels in the cow, which condition, according to Moore, will promptly be reflected in the child consuming the milk. On the other hand, if the animal is fed on dry food continuously, as they do sometimes in India for want of green fodder in summer, it will lead her to constipation tending to induce similar affection in the child. Again, a statement compiled by Captain Eakins, shows "that the milk from cows eating certain kinds of weeds may be conducive of hay fever when consumed by a susceptible individual."

Serious consequences may follow on account of the dairymen adding numerous chemical substances to milk such as, bicarbonate of soda, borax or boracic acid, salycilic acid or formaldehyde, in order to improve the keeping qualities or to preserve the raw milk. That this kind of milk is injurious to health and may lead to organic diseases especially in children has been emphasized by Dr. Ernst.

4. *Decomposed or Sour Milk.* Milk, even in the natural state has a number of non-pathogenic bacteria in its composition, but when exposed to insanitary condition becomes sour by joining with other outside bacteria, commonest of which are Bacilli coli. Within a few hours their number increases by millions, as a result, great changes take place—gas is set in and according to Dr. Plantenga "under certain conditions a heat resisting toxin" is produced, which may affect the delicate system of infants if such milk is given to them and may cause intestinal troubles which may at times be grave.

5. *Milk deficient in Nutritive Properties.* For the reason that milk sometimes constitutes the sole source of food in growing infants

especially those that are weaned early in life, it is important that it should be essentially well balanced with all its natural constituents, chief of which are Phosphorus, Calcium and Iron—' Faster the growth, the greater the demand for all food constituents used as constructive material for the formation of bones and other tissues," is a physiological fact.

As it is, in countries like Malaya, wherein majority of cases of milking animals are not fed on scientific principles, milk is poor in its food-elements, it is rendered poorer by the addition of liberal supply of water. If such impoverished milk be given to infants and growing children, it may retard their growth and lower the vitality of their bodies, thus predisposing them to either diseases of malnutrition or to specific diseases, or the latter may be the consequence of the former, as for example, Rickets is often followed by Tuberculosis. Dr. Lyster, an authority on Public Health, is of opinion that conditions of debility and ill-health may result due to vitamin deficiency in milk, and says that "it is almost unknown now-a-days except in infants who occasionally show Scurvy after a long course of feeding on boiled or sterilised milk, as the process of boiling and sterilising kills the value of vitamins."

Moreover, milk obtained from animals suffering from "milk fever" may be conducive of diseases of malnutrition, as "milk from milk fever subjects is deficient in mineral matter" says Crichton of the Rowett Research Institute.

In fact, almost any constitutional disorder on the part of a cow may affect the quality of milk and therefore the use of such milk may not be suitable for human consumption. "The high death rate among young children in summer was in some way connected with milk, but clear knowledge was lacking of the special agent responsible," is the very recent statement by Professor Van Oijen.

In conclusion, as man has been observed to be chiefly instrumental in propagating diseases through the supply of milk it may be safely said in the words of Hull "Man is his worst enemy whereas animals are a close second."

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Clinical Articles.

A CASE OF URETHRAL CALCULI IN A BULLOCK.

BY

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Subject :—A Bullock.

History :—The owner when questioned gave the following information, when he came to the Veterinary Hospital at Ahmednagar on 2-8-29.

The complaint began with an attack of Dyspepsia for about a week or so. Then at times Colicky pains were shown and the urine was observed to dribble from the sheath continuously during day and night. It continued for about a month during which time some country medicines were given to the animal by the owner, without any effect but on the contrary the animal was getting worse. It was then brought to the Hospital.

Symptoms :—On enquiry, it was found that the malady was about a month's standing and began with the attack of Dyspepsia. The animal was very weak and all the mucous membranes were pale. It took only a small quantity of food, and was constipated. Urine was passed continuously in drops. On rectal examination, the rectum was found partly full with hard mucous coated dung. The bladder was full. The flow of urine increased in the recumbent position.

Diagnosis :—A urethral calculus between pubic arch and the sheath was suspected. Soap water enema was given, and the animal was cast down and secured as for castration. The penis was brought out and caught firmly in the hand and an improvised oiled sound was passed in, to confirm the diagnosis. When about a foot of the sound went in, its way was blocked and when it was taken back and pushed with a litle more force, it was felt as if striking a hard object.

The owner was persuaded to give his consent to have the animal operated upon as that was the only course left.

Operation:—The position of calculus was located and a clean cut was made just over it. The opening was enlarged and the calculi two in number were removed. As soon as they were removed, urine began to flow in a stream till the bladder became empty. The animal felt great relief. The urethral wound was sutured with catgut; the skin wound was sutured with silk ligature.

The following mixture was administered :—

℞

Spts. Ammon Aromat.	oz i
Tr. Nucis Vomicae.	dr ii
Tr. Digitalis.	dr ii
Tr Hyosyamus	dr iv
Aqua.	ad pint i

Mft. haust. Sig. at once.

The animal was let loose. Gruel was advised for food.

Next day there was no improvement. There was at the site of the operation deffused swelling due to infiltration of urine and the animal would not lie down. It took very little food and water and it looked weaker. It was thought desirable to remove the sutures and allow urine to come out of the opening. After securing the animal, the sutures were removed and the urine gushed out of the wound. The urethral wound was kept in position with that of the sheath by means of sutures. The animal was allowed to get up but could not do so and after about two hours it died.

[Death may have been caused by uremic poison. *Ed. I.V.J.*]

INTERNAL ABSCESS, NEPHRITIS, TRAUMATIC PERICARDITIS AND CYSTITIS IN A COW.

BY

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This complex condition is rarely diagnosed during the time of ailment of an animal. The inability of a Veterinarian to determine the subjective symptoms of a patient of this sort need not be explained here.

Subject.—A red Cow, aged about seven years.

The animal was brought to the Hospital on the 6th February 1931, with a history of colicky pains evinced by the patient for over four days. Past history could not be traced out easily, the owner being ignorant of it. The animal was being fed on her usual diet of gram, bhusa and grass, but was said to be off feed and water since two days and rumination suspended. The bowels were constipated and she had passed a small quantity of foetid brownish coloured faeces, and only a little quantity of urine the day before she was admitted to the hospital. The milk yield was said to have been considerably reduced since a week.

On arrival at the Hospital, she lay down and showed no inclination to get up in spite of attempts to make her do so. However, after inhalation of Ammonia she stood up. The abdomen was slightly distended with gas on the left side. The gait of the animal was stiff. The muscles of the thighs and quarters were quivering. The double jerky kicking was very characteristic whenever she was lying down and also the grinding of the teeth.

Temperature 97·0F both rectal and vaginal, pulse hard and slow numbering about 33 per minute, respiration somewhat slow and shallow 8 per minute and mucuous membrane injected.

Nothing abnormal was found in the mouth. Auscultation proved the lungs to be normal. Cardiac area was increased.

On rectal exploration the sphincter ani was found relaxed, and the animal straining. Rectum contained small quantity of blackish grey hard faeces, mucus coated with offensive odour. The bladder was distended and its wall was found thickened. At the seat of the bladder and beyond it and towards the left side there was a huge distention on the floor of pelvis, about 10 inches in front of the rectum, which caused difficulty in passing the hand forwards. The right kidney was distended abnormally. The bladder was emptied with a catheter and the quantity of urine collected was preserved for examination. While the walls of the bladder were found collapsing after catheterisation, the fluctuating distention still persisted.

When we were attempting to unravel this knotty problem, by taking other morbid conditions such as extra uterine pregnancy, tumours of the uterus, hydrops uteri, our Professor Lala Durga Dass surprised us all by his usual smart way, by pronouncing a definite diagnosis of an internal abscess. This he at once proved by an exploratory puncture with a sterile trocar and cannula about ¼″ in calibre, when about a gallon of foetid pus escaped through the cannula.

Treatment.—A stimulating draught consisting of Ammonium Carb. 4 drams, Pulv. Nux Vomica 1 dram, Treacle 6 oz. and water 1 pint was administered. As the owner did not agree for laparotomy, an incision was made into the abscess per rectum about 10″ in front of the rectum. The cavity of the abscess, rectum and vagina were subsequently douched with Potassium Permanganate Solution 1-1000 and Boro glycerine 1-8 applied. The animal was put in a comfortable stable well supplied with thick bedding. A draught containing Tr. Hyosiamus 1 oz. and Oil 1 pt. was administered.

In the evening the animal was seen lying down and did not take food or water. Temperature 100·0F. A draught containing Camphor 1 dram, Tr. Hyosiamus 1 oz. Spt. Chloroform 1 oz and simple oil 12 ounces was administered. The vagina and rectum douched with Potassium Permanganate Solution 1—1000 and Boro Glycerine 1—8 applied. Green grass and water were placed before her.

On the 7th morning, the animal appeared brighter than before, and showed a desire for green grass and bran mash. The animal has passed a small quantity of faeces and urine. Examinations of urine and faeces were made and the following are the results :—

Urine :—White, turbid and thick ; heavy greyish slightly brown deposit ; specific gravity 1020 ; reaction alkaline ; urine contained pus cells, albumine, epithelial casts, indican, mucin, coliform gram positive organism, faeces contained coccidiæ along with gram positive organisms and streptococci.

Examination of Pus :—Culture showed gram positive organisms.

In the evening the animal was seen ruminating and a draught containing Camphor 1 dram, Spts. Chloroform 1 oz, Tr. Hys. 1 oz. and water 1 pt. was administered.

Since the animal was very much emaciated when admitted to the Hospital though there were no clinical manifestation of Tuberculosis, she was subjected to double intradermal tuberculine test on the 8th. Result of the same was negative. The animal continued to show improvement till the 12th. On the 12th of February 1931, in the afternoon she showed symptoms of colic.

By rectal exploration the abscess was again felt slightly distended. A sterilised trocar and cannula was passed into the abscess per rectum with all aseptic precautions. A little pus escaped through the cannula. The incision previously made was enlarged by 2", and vagina and rectum subsequently douched with Potassium Permanganate solution 1—1000. A draught consisting of Tr. Hys. 1 oz, Spts. Chloroform 1 oz, and simple oil 10 oz was administered.

On the 13th morning the animal was worse in condition and died in the afternoon. On Post-mortem the diagnosis was confirmed :—

1. A big abscess, almost occupying the broad ligament of the uterus.
2. Pyelonephritis of both kidneys and cystitis.
3. Lesions of Traumatic Pericarditis, a needle about 3" in length was piercing from the reticulum through the diaphragm into the heart sac.

In conclusion, I should remark that the result did not justify the iagnosis and the treatment given under the circumstances. There

were several opposing factors which rendered the carrying out the exact indications impossible. The owner would not agree for laparotomy in which case there would have been greater chance for the animal to live. To operate in a closed cavity on the one hand, and the low ebb of the animal's vitality due to ever so many morbid conditions on the other hand, were factors patent enough to bring about its end. This subject left for us a lesson of inspiration however problamatical a case might appear to be in the early years of experience the clinician is capable of attaining the sixth sense necessary for such exigencies if he has only the will to develop this faculty.

EPISTAXIS IN A DOG.

BY

G. A. Ajwani, M.Sc., D.V.M., D.V.H.,
District Veterinary Officer, Rajahmundry.

R. Jayaram and D. Vaidyanathan,

Veterinary Assistant Surgeons, Ellore.

Subject:—A terrier dog, 3 years old, was admitted as an inpatient in the Veterinary Hospital, Ellore, on the morning of 25—4—1932 with the complaint that there was profuse bleeding from the nose.

History:—The history presented by the owner was as follows: the animal was alright the previous day, was fed on bones and intestines. It stayed in the house all night, and in the morning profuse bleeding was observed from the nostrils. The disease was put down as epistaxis.

Treatment:—Examination of the nostrils showed no injury and the cause of the complaint could not be ascertained. The bleeding occured from both the nostrils. The nostrils were douched with a solution of permanganate of potassium and then with adrenalin chloride solution. As the bleeding did not stop within about half an hour water was poured on his head from the water tap for some time but without effect. An injection of adrenalin chloride solution was given subcutaneously but to no effect. Plugs of cotton-wool dipped in Liq. ferri perchloridi were introduced into the nostrils. Owing to the plugs in the anterior nares the blood was not coming out that way, but it seemed that the same was being swallowed as the blood was trickling down the posterior nares. The dog vomitted clots of blood mixed with pieces of intestines which it had eaten the previous night. As the bleeding continued injection of atropine sulphate 1/180th of a grain in 1 c.c. of distilled water was given subcutaneously. The bleeding stopped in about five minutes. No further treatment was given. The animal was left alone in the dog cage, it was drowsy and pupils of both the eyes were dilated. The animal became better the same evening. The next day it was given a dose of castor oil and discharged. The animal was subsequently seen feeding well and alright.

A CASE OF TOBACCO POISONING?

BY

P. LALL, G.B.V.C.,

Touring Veterinary Assistant Surgeon, Warsaliganj,
Bihar & Orissa.

Subject:—A Grey C, B. Entire pony, sent by a Tahsildar came to the Dispensary for treatment one evening.

Symptoms:—Staggering gait, champing of jaws, profuse salivation, drowsy appearance, shivering, reeling from one side to another and having a tendency to fall forward. Pulse weak. Temperature normal.

History:—On enquiry, it was learnt that the animal had a fast drive for a long distance at a stretch, and soon after its return the animal showed symptoms of colic. The owner got it treated by a local quack, who gave half a pint of Crude Castor Oil with about 4 ounces of 'Gudak'—a mixture of tobacco with other flavouring agents, used in a hukka (Hubble—bubble) by villagers. As the condition of the animal did not improve, it was sent to the Veterinary Dispensary by the owner for further treatment.

From the symptoms presented by the animal and the history given by the Syce, I diagnosed the case to be one of Nicotine Poisoning.

Treatment:—The animal was given soap water enema after back raking. One dram of Liquor Strychnine Hydrochlor was injected hypodermically. Soon after, the animal stood up. It was then well covered and plenty of bedding was given as the night was cold. The mouth when examined was found much ulcerated due to rough handling received during the administration of medicine by the quack. Washed the mouth with Condy's Fluid and dressed the ulcerated surfaces on the tongue and cheek with Boric Glycerine. Kept the animal on bran and linseed mash for three days. On the 11th day it was discharged fully cured.

A CASE OF PURPURA HAEMORRHAGICA.

BY

W. K. Abasi, G.B.V.C.,

Veterinary Assistant Surgeon, Jacobabad, Sind.

Subject :—Bay C. B. Mare, six years old.

History of the case -—On 12th October 1931, the animal was brought to Wadia Veterinary Dispensary, Jacobabad, for treatment of a swelling on the sub-maxillary space. On examination the case was diagnosed to be of one "Strangles".

There appeared several small abscesses like a chain running from sub-maxillary space to the near side of the cheek, right up to the angle of mouth and chin. All the abscesses were opened one by one and dressed antiseptically. Further treatment consisted of Saline electuary and Salts in drinking water and soft nourishing diet.

On 17th October, the animal showed severe urticarial erruptions all over the body, the muzzle was swollen to some extent and several oedematous round oval elevation of the skin of various sizes were found in limbs, chest and abdomen, These eruptions and elevations mostly appearing and disappearing every day in different regions. There were characteristic petechiae on the nasal mucous membrane and the body temperature rose to 103°F to 104°F, throughout the course of disease. There was persistent swelling on all the four limbs and the animal was quite unable to lie down for about 20 days till it subsided.

These symptoms indicated that the case of Strangles had developed Purpura Haemorrhagica and therefore the following treatment was adopted :—1½ ounce of "Lugols" Solution was injected thrice a day for two days and once a day for two days intratrachially. Internally, electuary of Quinine Sulphas 2 dr. Pulv: Gentian Radix 4 dr was given once a day and Potash Chloras 1 oz in drinking water.

After the treatment the urticarial swellings decreased in size considerably, but high temperature persisted. After a week the above mentioned Iodine treatment was repeated for four days. This brought down the temperature to normal. The animal was then put on Liquor Arsenicalis 1 oz Tincture Ferri Perchloride 4 dr, mixed with Jawari flour and treacle, for a week only, and she was again given vegetable tonics. Ultimately the mare was discharged completely cured on 28th December 1931 and she is now racing.

I am grateful to Mr. Abdul Majid Siddiqi. G.P.V.C., Veterinary Inspector, Upper Sind Circle, Sukkur, who very kindly helped me in diagnosing and treating the case.

TRAUMATIC PERICARDITIS IN TWO BULLOCKS.*

BY

A. G. KAKA, G.B. V.C.,

Veterinary Assistant Surgeon, Larkana, Sind.

Subject :—Grey Bullock, brought to the Veterinary Dispensary, Larkana, for treatment of lameness in left front leg.

History of the case. The bullock coughs frequently, feeds well, yet loses condition.

Diagnosis. On examination, it was found that just behind the left elbow there was a hard swelling. The thermometer showed a rise in temperature. Traumatic Pericarditis was suspected.

Treatment :—After fomentation with hot decoction of neem leaves the abscess was opened when plenty of thick foul smelling pus came out. On exploring the cavity the presence of a needle was felt and on removal it was found to be three inches in length. The wound was dressed in the ordinary way and eventually the animal was discharged cured.

2. *Subject* :—A Red Bullock, brought to the Dispensary for treatment of a swelling under the abdomen and on the right side of the chest.

History of the case :—The owner stated that the bullock was not feeding at all and was unable to lie down and was coughing badly.

Diagnosis :—Traumatic Pericarditis.

Treatment :—The animal was cast for opening the abscess behind the elbow ; the animal struggled while securing it for an operation and the abscess burst open and on exploring a needle 3'' long was found and removed from the abscess cavity. The animal was dressed as usual and discharged cured.

STRYCHNINE POISONING IN A DOG.*

BY

ABDUL MAJID, G.P.V.C.,

Veterinary Inspector, C.V.D., Sukkur, Sind.

Dogs are poisoned with strychnine accidentally or intentionally with or without malice. The writer happened to come across three such cases.

Case No. 1 :—A small terrier. The owner gave him a tonic pill containing extract of Nuxvomica and he showed symptoms of strychnine poisoning after an hour as under.

*** (Read before the 1st Conference of Sind C.V.D , Subordinate Service Association held at Jacobabad on 31st Jan. 1932).**

Muscular twitching, trembling, in-co-ordination of movements and rapid respiration.

Treatment:—15 Grains of Chloral Hydrate dissolved in one ounce of castor oil given internally cured the dog.

Case No. 2:—A airedale bitch belonging to a lady. One night the owner was alarmed to see her pet showing "violent signs" She thought it was a case of "*Rabies*" and ran to the writer in great distress for help. On examination it was found to be a case of strychnine poisoning, showing typical stymptoms which were very violent. The case was brought to the hospital immediately and inhalation of chloroform given, which gave the desired result of relaxation of muscles. Then 20 grains of Chloral Hydrate in ounce of caster oil was given per mouth. The bitch drank a cupful of warm milk after an hour. Next morning she was much better though getting spasms of less severity frequently. Another dose of 15 grains of Chloral was given and she recovered eventually,

It was learnt subsequently that a servant gave her poison maliciously.

Case No. 3:—A cross bred dog weighing about 40 lbs. Some baits, containing 2 grs of strychnine in each, were prepared by the owner of the house and thrown away in the hedges of the compound intended to kill stray cats. A guest's dog accidentally and without the knowledge of his owner, picked up one or more of them and began to show symptoms of "fits" as described by the owner of the dog. The animal was brought to the hospital and diagnosed by the writer as a case of strychnine poisoning.

Symptoms in this case were more pronounced and violent convulsions and severe spasmodic contraction of the mucles Opisthotonus at frequent intervals, flow of frothy saliva from the mouth, laboured and accelerated breathing—Dyspnœa. On touchiag the body the dog was greatly excited-Hyperaesthesia.

Treatment:—The dog was given chloroform by inhalation first. Then an attempt was made to administer a mixture of 20 grains of Chloral Hydrate in Oleum Recini, but the dog could not swallow it. The stuff was injected intra-rectally by means of a syringe to which a long flexible nozzle was attached. This had good effect but the dog still appeared to be in danger. Another dose of Chloral Hydrate was repeated per rectum after 4 hours. The dog was lying the whole night half dead. Next morning he vomited some liquid ingesta, and eventually recovered.

MILK FEVER.

BY

B. RAMAYYA, G.M.V.C.,

Veterinary Assistant Surgeon, Parvatipur, Madras.

Subject:—A good milking cow, second calving.

History and symptoms:—In the morning of 3rd April, 1931, the owner of the cow came to me and informed me that his cow calved on 1st April 1931, and that on the next day she was unwell and on that morning she was unable to get up. I went to the place at 8 a.m., and found the following symptoms: Temperature 100. 2°, base of ears and horns cold, body and extremities cold, muzzle dry, animal very dull. On questioning, I could elicit that the animal had a similar attack previously and the animal which was on the point of death was saved by veterinary aid that time. I gave the following drench and told the owner to inform me if the animal gets worse.

R/-

Spirits·Ammon Aromaticus	2℥
Tincture Nux Vomica.	4 dr.
Ol. Terpentinee	10℥
Tincture Asafoetida.	10℥
Rice Gruel	4 pints.

Mft. Haust, sig. now.

The dung and urine which were not passed for the previous twelve hours were evacuated.

At 11 a.m., as expected, the owner came running and informed me that the cow got worse and was lying prostrate on the ground and was struggling. I hastened to the spot with necessary requirements and the condition of the animal was as follows:—Animal prostrate on the ground with head and limbs extended, neck rigid, the limbs could be flexed with difficulty. She was insensible, unconcious, body was cold all over, tears from the eyes frothy salivation. champing of the jaws, grinding of the teeth, pulse frequent, respiration slow and stertorous.

Treatment:—

℞

Calcium Chloride	30 grs.
Aqua Distillata	2 oz.

Mft. sol. injected intravenously.

℞

Liquor Strychnine Hydrochloride	10 m.
„ Adrenaline „	1½ oz.

Aqua Distillata 2 oz.
Mft. solution, injected intravenously.

The udder was also inflated. The animals position was changed, so as to rest on the sternum. This was done at 11-30 A.M , and I waited there till 1 P. M., to watch the progress. At 1 P.M., the animal stood up when assisted to do so. She was very shaky, and was whisked with straw. She showed an inclination to drink. She was offered gruel water a favourite diet of sick animals in these parts—and this she drank two or three mouthfuls. The grinding of the teeth, champing of the jaws and frothy saivation were still present. She lay down again on the sternum, and again got a fit of similar symptoms. The following dose of medicine was repeated:—

℞

Calcium Chloride	30 grs.
Aqua Distillata	2 oz.

Mft. solution injected intravenously.

I then left the place, leaving necessary instructions and went to see her again at 4 P.M.

The animal was resting on the sternum to my surprise and though she had a temperature of 103° F. she seemed to recover alright. The next morning she was found normal.

Freaks of Nature.

HERMAPHRODITES

BY

J. C. DAVID, G.M.V.C.,

Veterinary Assistant Surgeon, Tellicherry, Madras.

Case:—A kid.

History:—The kid was brought to the dispensary for incontinuance of urine, according to the version of the owner.

Diagnosis:—The kid appeared more a female than a male to a casual observer. On examination the animal was found to be a hermophrodite with two separate urethral openings, one below the other Both the openings voided urine. The lower opening was situated as it should be in a female genital and was normal, but the one above this was found terminating in a thickened skin simulating the male organ. In the place of the udder, a scrotum was visible with what felt like glands in it. Just in front of the scrotum were teats small in size.

Remarks :—This is the second case of a hermaphrodite I have seen in kids.

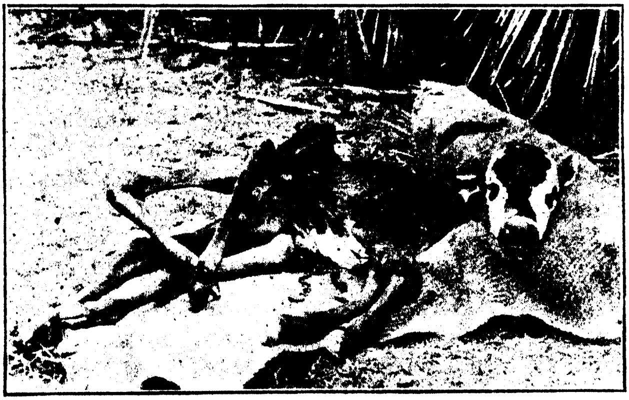
A SIX LEGGED GOAT.

BY

M. SUBBA RAO, G.M.V.C.,

Veterinary Inspector, Tiptur, Mysore.

The accompanying photograph of a six-legged bull calf is snapped at Maramgere, nearly a mile from Tiptur. I was invited to attend on a dystokia case on the 11th January 1932 at the village. The calf has two hind legs almost similar to those of the actual ones on the right side. It has two umbilical cords and these are seen in the photograph. It has four testicles two between the each pair of hind legs. This evidently, is a fusion of twins.



Notices of Drugs.

TREATMENT BY MEANS OF SULFARSENOL OF A CASE OF MYELITIC MENINGITIS—THE RESULT OF DISTEMPER COMPLICATIONS.

BY

M. E. MONDON,

Veterinary Surgeon, Remoulins (Gard).

I have just used Sulfarsenol (the Sodium salt of the acid Sulphurous Ether of Methylolaminoarsenophenol) for the first time in the treatment of a nervous localisation as a result of Distemper, and the excellent result which I obtained with this treatment induces me to record the following observation :—

Observation :—A German Sheep Bitch, aged two years, belonging to M. C......., Laffouz-less-Bains (Gard).

On November 2nd, 1927, this animal showed symptoms of acute bronchial pneumonia, anorexia, fever, melancholy, intense dyspnea with labial breathing, and mucous rales on ausculatation. The treatment given (revulsives, cardio tonics, caffeine and camphor in oil, Syrup of Terpine and abscess fixation) enabled a cure of the pulmonary affection to be effected in about ten days' time. The bitch, however, remained very weak and extremely emaciated. To effect a complete cure the daily administration of Cod Liver Oil was prescribed.

Two days later, on the 14th November, when I considered the animal convalescent, the owner came to me requesting me to come to his house as soon as possible to examine the bitch again which, he said, was unable to leave its kennel, and could not even stand up. The following symptoms—motor indisposition, paralysis of hind quarters, walking almost impossible, frequent falls, light choreic movements of the head, no fever, (the bitch was melancholy but ate whatever was given it) enabled me to diagnose Myelitic Meningitis as a complication of the original infection, Broncho Pneumonia.

Remembering a recent communication of my Colleague Ch. Monpert, Veterinary Surgeon, which appeared under the title "Treatment by Sulfarsenol of Grave Nervous Localisation of Distemper in Dogs" in the October Number 1927 of "La Revue Veterinaire", and which related a cure by means of Sulfarsenol of an almost similar case, I happily thought of having recourse to this medication.

For reasons not my own, I was able to commence treatment only on the 26th November, that is to say, about 12 days after the appearance of the first signs of nervous localisations. On the 26th, the disturbances had neither increased nor diminished.

The following are the injections which were administered:

26th November	...	12 centigrammes
28th November	...	12 ,,
30th November	...	12 ,,
2nd December	...	12 ,,
4th December	...	12 ,,
6th December	...	18 ,,
8th December	...	18 ,,
10th December	...	18 ,,
12th December	...	18 ,,
14th December	...	18 ,,

The injections were given, for the sake of convenience, subcutaneously in the conjunctive tissue behind the shoulder, sometimes on the right sometimes on the left. The dose was dissolved in 2 ccs of recently boiled and cooled distilled water.

Upto the 30th November there was no change in the patient. On the 2nd December, after the 4th injection, I observed with satisfaction a very appreciable improvement. The bitch left her kennel of her own accord; she was less melancholy but walking was still uncertain and after every few steps sudden falling to the ground occured.

After the 6th injection on the 6th of December, cure, so to speak, was complete. Falling to the ground had stopped, there was no motor disturbance and the slight rythmical movements of the head which on the 4th of December had been perceptible, had completely disappeared. There was only a little weakness in the hind quarters. To avoid any possible relapse, I gave injections right up till December 14th. I have recently seen the animal which is in excellent form. I wrote this note on 3rd March 1928.

The bitch had always supported the treatment well. About 2 or 3 hours after the injection, only a little fever and weakness were noticed. I am confident that in this case Sulfarsenol had an undeniable curative action. In other similar cases treated with arsenic or Strychnine Sulphate injections, improvement, when it was made manifest, was slow, relapses were frequent and cure often incomplete.

This isolated observation would not have been of any special interest perhaps, were it not for the fact that it collaborates those observations related by Charles Babb, Veterinary Surgeon, in his thesis entitled " L'Arsenotherapie en medicine canine par Lt. Sulfarsenol" and that to which I have already referred in the beginning of this note. It confirms the words of these two authors namely :—

1. The certain curative action of Sulfarsenol in numerous cases of nervous localisation as a result of Distemper.
2. Its very low toxicity which allows of the use of Sulfarsenol instead of Strychnine Salts.
3. Sulfarsenol can be administered subcutaneously which facilitates its employment to a greater degree.

SULFARSENOL IN PROLONGED CONVALESCENCE.

BY

CHARLES BABB.

Extract from " L'Arsenotherapie En Medecine Canine Par le Sulfarsenol."

For a very long time it has been a known fact that Arsenic is an excellent general tonic. Owing to its arsenic content and mode of action, which we have previously studied, Sulfarsenol strengthens the defence of the organism. It is therefore logical to utilize Sulfarsenol as a reconstructive and anti-infective. This arsenobenzene has been of very great assistance to us in convalescent cases, especially following Distemper, Pneumonia and acute Enteritis.

In these cases, subcutaneous injections of Sulfarsenol, gave the best results; the medicament being absorbed more slowly, exerted its maximum action without causing any fatigue in the patient.

We have stated that it is not necessary to have recourse to large doses.

Given every second or third day, according to the reaction in the patients, weak doses,that is equal or double the first dose injected, gave us, in general, excellent results.

Very often, after 2 or 3 injections, the general state improved, anorexia disappeared, the appetite returned, and vitality was renewed.

A NOTE ON THE THERAPEUTIC USES OF EUPHORBIA NANA, ROYLE.

BY

M. LAKSHMANA RAJU, G.M.V.C.,

Veterinary Assistant Surgeon, Vizianagaram, Madras.

Natural Order :—Asclepiadaceae.

Telugu Name :—Paladumpa

Introduction :—The tuber of this plant Euphorbia nana, Royle as identified by the Government Systematic Botanist, Coimbatore, is quite different from that of Circuma angustifolia. I have made mention of this so that this plant may not be mistaken for the other because the name "Paladumpa" is common to both. It is found in abundance in and around the forests of Tekkali (Ganjam Dt.). It usually grows on gravelly or sandy soil.

The tuber was analysed by the Research Officer, Medical College, Madras, and found to contain Resin, Tannin, Sugars, Starch and Cellulose. The medicinal value of the tuber as a *galactagogue* was studied by me on some animals. The tuber was brought to my notice by the owner of a cow, who brought the animal for treatment for diarrhoea. The owner it appears gave the cow 3 to 4 tubers of Euphorbia nana, Royle, ground and mixed with rice gruel for a couple of days to improve its milk production, and accordingly the cow gave 1¼ times the usual quantity. The owner not being satisfied with the small increase doubled the dose and consequently the animal had diarrhoea.

I have tried this tuber on cows as a galactagogue with some success. According to the size of the animal, one or two tubers are ground and mixed with ½ an ounce of Pulvis Tonic and administered either as an electuary in jaggery or mixed in gruel (1—2 pints.) This treatment is continued for a period of one or two weeks. The milk production is found to be appreciably increased.

ANTIPHLOGISTINE IN SMALL ANIMAL PRACTICE.

BY

WILLIAM D. HOWATT, I.M.D.,

Mamaroneck, N. Y.

In the treatment of small long coated dogs, many cases are brought to my office, with inflamed areas from no apparent cause and with no history leading up to the cause, animal just commences to limp or favour a particular part of the body.

Upon examination, you find acute inflammation with no sign of injury and in a great percentage of these cases, the cause turns out to be a small puncture wound which has completely closed. I apply as heavy a layer of hot Antiphlogistine as the animal will stand over as large an area as is possible (for the puncture may be off from the immediate swelling) cover with oiled paper, a pad of cotton and bandage. Usually at the end of 12 hours, you remove and your cause stands out plainly, then open and drain and again apply Antiphlogistine leaving a drainage opening and your client is happy, your dog makes a rapid recovery and you prove to yourself that Antiphlogistine is one remedy that proves its value every time you use it in the treatment of acute inflammation.

Where an acute swelling follows the fracture of bones of the leg (especially in the smaller dogs) and is going to hold back the application of a splint dressing, just apply a good coat of Antiphlogistine, pad well with cotton, and a light temporary splint dressing, let rest for 24 hours and upon removal you will find fractured area ready for your permanent splint dressing. This ofcourse applies to the simple fracture and also in compound fracture where the skin is not torn.

Notes.

We feel glad to inform our readers that Mr. H. N. Chelva Ayyangar, Lecturer in Anatomy of the Madras Veterinary College, has begun from this issue to write on "Anatomical Anomalies and Deviations". We hope it will receive the attention it deserves at the hands of our readers. It is bound to be a valuable record, coming as it does from such a critical and careful student of Anatomy as Mr. Ayyangar.

* * * *

Capt. S. Datta, B. Sc., M.R.C.V.S., was the first to observe Schistosomes in Nasal Granuloma, at Muktesar. We are glad to note that two other workers viz. Mr. P. G. Malkani of Patna Veterinary College and Mr. M. Anant Narayan Rao of Madras Veterinary

College, have also independently found them almost simultaneously in such cases. These workers have therefore confirmed Mr. Datta's findings.

* * * *

We find in an article in the "Statesman" of Calcutta dated 24th May 1932, that Capt. Datta has found Schistosomes in the kidneys of Hill Cattle suffering from Haematuria. Here is again another field for other workers.

* * * *

We have great pleasure in announcing that Mr. Ram Lal Kaura, L.V.P. Hons., about whom we reported in our last issue under the caption "Yet Another" as having left for Canada for Veterinary studies, has stood first in the Final Examination held by the University of Toronto in the B.V.Sc., V.S., Degree and is awarded the First Prize for General Proficiency and a Special Prize in Higher Bacteriology. We congratulate Mr. Kaura on his success. He is the first Indian to obtain a Canadian Degree in Veterinary Science. He has now gone to England and joined the renowned Dairying Institute at Reading. He will take up the M.R.C.V.S., course from October 1932.

* * * *

News comes from Bombay that Mr. D. S. Laud has taken the the place of Capt. Flanders, V. S., (Toronto) R.A.V.C. (Retd.) as Superintendent of Municipal Markets and Slaughter Houses for a period of six months. Capt. Flanders has proceeded to Australia on leave. We congratulate Mr. Laud on his well merited promotion.

* * * *

Major R. F. Stirling I.V,S., Director of Veterinary Services, Central Provinces, has published a very interesting paper on "Some Experiments In Rinderpest Vaccination: Active Immunisation of Indian Plains Cattle by Inoculation With Goat-Adapted Virus Alone In Field Conditions" in the Veterinary Journal Vol. 88, No. 5 of May 1932. His experiments seem to be such as to be copied by other Provinces. This method should not only simplify the technique, but also reduce the expenditure of immunisation of Cattle against this disease.

* * * *

We have received a paper on "Serum-simultaneous inoculation against Rinderpest" carried out in a village, for the first time in the Bombay Presidency. The technique observed is the same as is followed in other Provinces. We are glad to note that Bombay is also now taking up S.S. Inoculation, though very late in the day.

* * * *

We feel glad to be able to announce, that Ash Lockhart. Inc Kansas City, Missouri, are now offering to the *profession only* "Anthrax Bacterin (concentrated) after exhaustive, painstaking and expensive experimetal work conducted under both Laboratory and field conditions.

* * * *

The large amount of field work done with Anthrax Bacterin in 1930 and 1931, in the infected territory of Louisiana, South Dakota, Nebraska, Oklahoma and Iowa have thoroughly demonstrated:—that it is safe, being a sterile product; that it closely approaches perfection as an effective immunizing agent; that it produces immunity of long duration; that it produces immunity quickly; that it lends itself admirably to use simultaneously with Anti-Anthrax Serum in infected herds where some of the treated animals are in the incubative stage of Anthrax; that it is convenient and practical.

* * * *

The recommended dosage of Anthrax Bacterin (concentrated) is 10 c.c. for horses and cattle; 5 c. c. for sheep and swine. The price is $2.00 for 100 c.c. package, and $4.50 for a 250 c.c. package. They pay shipping charges on orders amounting to $10.00 or more.

Anthrax Bacterin (concentrated) will be sold only to Graduate Veterinarians.

* * * *

Congratulations to United Provinces' Veterinary Association Under its auspices, the 12th U.P. Veterinary Conference was held on the 27th February 1932, with the usual success. Captain S.G.H. Hickey opened the Conference with a sympathetic speech. We wish the other Provinces are as enthusiastic as U. P. in the matter of holding Conferences.

* * * *

Khan Bahadur Sheikh Niaz Mahammad though growing old in age, has not in the least lost his zeal for work and is responsible for the success of the Conferences. Few people realise the value of such conferences.

* * * *

That tried worker and devoted servant of the profession, who gave so much to its cause, Mr. Syyed Mahammad Raza Hussain, was also there. These are names which the profession cannot afford to forget.

* * * *

From the proceedings of the Conference, we are glad to learn that the Retrenchment Committee in U. P. has recommended that

Livestock improvement must come under the Veterinary Department. It is a very wise proposition. We wish it materialises soon.

* * * *

Surra in Mules has been treated with Bayer 205, intrathecally and intravenously by the Divisional Superintendent Mr. T.S. Davies, Agra. The results have been quite encouraging.

* * * *

We publish elsewhere in this issue the proceedings of the first Conference of Veterinary Subordinates in Sind. Our readers will be glad to see in this that the Superintendent of the C.V.D., Sind and Rajputana Mr. J. H. G. Jerrom, M.R.C.V.S., I.V.S., attended and opened the Conference and presided over its deliberations. The infant Association of Sind is fortunate in having gained the recognition of the authorities soon after its birth. We wish the young Association long, prosperous, happy and useful career.

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We are glad to note that our brothren in Sind are keenly alive to the necessity for carrying on propaganda work amidst cattle owners. Their brethren in other parts of India too have recognised the great necessity for this work and have been bringing this question to the notice of the authorities in each province. But the sad tale of want of funds is trotted out in each province for matters veterinary. But each province somehow finds funds for such and other kinds of work in Public Health, Agriculture, Co-operative and other departments. Who is responsible for this singular misfortune of the Veterinary Department in each province in this country? It cannot be suggested that the Heads of the Provincial Veterinary departments are lagging behind the Heads of the other departments in bringing prominently to the notice of the Government the pressing veterinary needs of the country.

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We have more than once, remarked in these columns that Bombay is one of the most backward provinces in the matter of providing veterinary aid though it is the first of the provinces to have started a Veterinary College. We see from the Welcome Address, that Sind,—an appendage of this backward province much more backward than the main. The Engineering Experts find it possible to successfully induce the Government to find and spend crores of rupees to provide water for irrigating vast areas in Sind. It is a pity, if the Experts there do not find it possible to find a few thousands of rupees to improve and protect the cattle wealth of the province, which needs strong and healthy cattle now in greater numbers than in the past to cope with the increased agricultural operations.

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The Welcome Address appropriately quotes in this connection paras 22 and 23 of the recently published report of Cattle Supply Improvement Committee in Sind. These paras deal with the necessity for the expansion of the Veterinary Department in Sind. We agree with the Committee, that in the present state of affairs in Sind a separate itinerating staff is urgently needed. The Committee also rightly recognises that the present system of dual control of the Department is unsatisfactory and should be ended. The Local Boards which are proverbially poor in the finances, should be entirely relieved of this burden of maintaining the veterinary staff. It should be entirely financed and controlled by the Government.

* * *

The Committee also feels that outbreaks of contagious diseases among cattle are not reported to the Veterinary Department with sufficient promptitude. This is true in almost all the provinces in this country and Sind is no exception. It is no gainsaying the fact that prompt reporting is the first and the most important step in successfully stamping out every contagious disease from an area. Failure to do this leads to the heavy loss to the ryot, and expenditure to the Government: therefore the Heads of Veterinary Departments should insist upon prompt reporting of the disease in each case.

* * *

The address hopes for better recognition of the claims of Sind in the contemplated reorganisation of Veterinary Service in Bombay Presidency.

In view of the great agricultural development and irrigation of waste lands under the new famous Sukkur Barrage, the development of a Veterinary Department is of paramount importance to Sind. We hope the Government will pay timely and due attention to this important factor in the Agricultural development in Sind.

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We invite the attention of our readers to a report of the proceedings published in this issue of the Fourth Annual Conference of the Mysore Veterinary Medical Association, Bangalore, held under the Presidency of Mr. S. P. Rajagopalachari, B.A., B.L., Revenue Commissioner in Mysore. Everybody present on the occasion missed the genial presence of Major R. W. Simpson, M.C., G.B.V.C., whose abiding interest for the cause of Veterinarians in Mysore ushered this Association into existence in 1928. But the fine tradition handed over by him was well kept up by his successor

Mr. K. Krishniengar. There was a free and frank exchange of ideas and views among different members gathered on the occasion.

* * *

Mr. Krishniengar in the course of his Welcome Address has announced " It is encouraging to note that goat virus alone, used for the protection of cattle against Rinderpest has proved efficacious and the retests with bovine virus of the Amrita Mahal herd inoculated with goat virus have demonstrated that a solid immunity can be conferred by goat virus alone. It is contemplated to substitute Serum-Simultaneous method of protection against Rinderpest in the near future by goat virus alone which will be more convenient and economical ". Yes, it will also revolutionise the present system of protection against this worst cattle scourge in India, if this new method is found successful. The profession will keenly await the further developments in this direction.

* * *

He has aptly referred to the presence of the Revenue Commissioner to open a Conference of Veterinarians " as demonstrating the triangle of the economic prosperity of the country—land, labour and live-stock ". The Veterinarians in Mysore seem to be good adapts at getting the right sort of the people to further the work of the profession and the department. The Revenue Commissioner in his Opening Speech duly recognised the several advances made by the Civil Veterinary Department, Mysore. We have referred to these matters in these columns several times.

* * * *

Mr. S. P. Rajagopalachari who learns the country and her needs quite well, has made some useful suggestions for the expansion and the activity of the Veterinary Department. He pays prominent attention to the propaganda work and says, an intensive campaign of propaganda work seems to have been urgently called for as the benefit of the work done by the Veterinarians both in Research and in the Field can only be realised to the fullest extent by propaganda. He rightly values the lectures through lantern slides, as they would be a potent factor in moulding the minds of the illiterate ryot. He has no doubt, that it is a matter of cost, but still, he rightly considers it to be a matter of imperative necessity.

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All this is said by a responsible and experienced State Officer. We are never tired of bringing this matter repeatedly to the notice of the Veterinary authorities. We therefore agree in the statement that propaganda work is an imperative necessity.

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We are sure that Veterinarians not only in Mysore but all over this vast country have been already following the suggestion made by the Revenue Commissioner regarding the co-operation, the cordial relationship between the officers of the Revenue and Veterinary Departments. We hope the younger generation of both the departments will pay greater attention to the need for such relation. His suggestion to utilise the help of the village panchayats in the task of the improvement of the cattle, increasing the number of Veterinary Dispensaries, improving the village pasture lands and in various other directions is really worth following throughout the country. We hope our friends in Mysore will pursue this suggestion and give a lead to the other parts of India.

* * * *

Coming to the resolutions passed at the Conference, we find the Association has requested for a grant of subvention of Rs. 200/— to further its objects. Since the Association and the State Veterinary Department have got identical objects and interests there should be no difficulty in granting this modest sum. Another resolution requesting the Government to permit the officers of the C V. D., to undertake private practice implies that there is a ban on such private practice. We were not aware of such a thing till now. For the real growth of the Veterinary profession to the advantage of the stock-owners in the State, it is highly necessary that this ban should be lifted up. In Madras and other provinces such private practice is allowed to the employees of the C. V. D., and it is working quite satisfactorily. We have every reason to believe that it will work equally well in Mysore.

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The Association has not been slow to act up to the suggestion of the Revenue Commissioner and we find in one of the resolutions it has represented to the Government for extension of Veterinary aid to the rural parts and under village panchayats. All these resolutions are in keeping with the career of a growing profession and its progressive Association under the encouraging patronage of the enlightened Director of Agriculture in Mysore.

* * * *

We had recently occasion to visit some of the Veterinary Institutions in Mysore State. We must confess to a sense of horror at the way these institutions have been housed. Some of these have been located in buildings which are unfit for housing any office much less a hospital. Most of them are in very miserable condition with utter lack of accommodation and exposed to sun and rain. Even the Premier City of Bangalore has not got a building of its own for the Veterinary Hospital. The Engineer Dewan during his administration in Mysore provided decent buildings for almost all offices in Bangalore City. How this one Department escaped his notice is a great wonder to everybody. The present administration seems to be keenly alive to the necessity of beautifying the cities, towns and villages. We do not clamour for beautiful buildings but we should certainly require convenient buildings with large premises and enough of room for office, dispensary, stores, in and out-patients and other necessary purposes. It is hoped this matter will receive the early attention of the State Authorities.

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We are glad to announce that the business of Messrs: N. Powell & Co., which was upto now a Proprietary concern, has been converted into a Private Limited one. This will undoubtedly enable the management to further the scope of their present activities and make the concern more popular. In this connection, it may be usefully recalled that this institution was started as far back as 1886.

* * * *

Dr. Nair, the founder of this firm, had then a huge practice in his profession, when he conceived an idea of opening a small shop. An humble beginning was made by keeping some drugs and manufacturing a few patent medicines. Later on, the firm carried on some import and export business in the same line, on a moderate scale. In 1899, they opened a small workshop for repairing Surgical Instruments and also manufacturing Orthopaedic Appliances and Artificial Limbs. At the same time, they started manufacturing a few Pharmaceutical Preparations, such as Tinctures, Liquors, Liniments, Ointments &c. and also a few Proprietory Preparations. In this line, they made rapid progress, so that in a couple of years, the small workshop was replaced by a factory. By dint of efficient work they won the confidence of their constituents.

* * * *

In 1905, the firm was able to obtain the first contract of about Rs. 10,000/—for manufacturing Aseptic Hospital, Furniture for the J. J. Hospital, Bombay. Success in this regard gave them an impetus for manufacturing Surgical Instruments also on a large scale. In a very short time, they received orders from all over India for making Aseptic Hospital Furniture.

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In 1909, they secured a substantial order of Rs. 50,000 from the Government of Bombay for equipping various Hospitals and Dispensaries in the Presidency. His Majesty, the Amir of Afganistan also placed with this firm a large order for Surgical Instruments, Parmaceutical Preparations, Furniture.

* * *

The old place at Duncon Road was found insufficient for such an ever increasing volume of business and therefore, a large plot of land was purchased on which a huge building to accommodate all their Departments was built at the junction of Sandhurst and Lamington Roads, in the year 1913. At present, their offices and all the Selling Departments are located in this building. After a few years they had to shift even the Factory from the old place. In the year 1918, they bought another extensive plot of land near Club Road and built separate buildings for the Pharmaceutical Works and Surgical Works and also erected several Godowns. After about six years, even the new buildings were found inadequate for their Works which were rapidly developing and therefore, in the year 1924, they erected a huge fire-proof concrete building with three stories on typical modern plan. In the building, they have accommodated their Surgical Works and Pharmaceutical Works, which are equipped with the latest plant and machinery. Their Laboratory is unique in India and it is under the supervision of highly qualified Chemists.

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In India, where industry is pre-eminently backward, it is undoubtedly very difficult to carry it out on a large scale, especially because the Pioneer of an industry is required to depend on no other place or person but solely on himself for various articles for constructing it right from top to bottom. In the West, however, there are all facilities in the way, since manufacturers can secure whatever part or fittings they require for their products from next door neighbours, without trouble. Messrs: N. Powell & Co. by this time, though single-handed, have reached the stage where they have been able after a good deal of toil to manufacture everything required in their enormous Factory which will be found to be up to-date and unique in India.

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Industry and enterprise constitute the watchword of Messrs: N. Powell & Co. of Bombay. It can also be maintained with propriety that the watchword is rather indefatigable industry and persevering enterprise. In the India of today, we notice great progress and steady expansion of industries in many directions; but starting as far back as 1886, the said manufacturing Institution modestly won its way to leadership by sheer dint of honest and steadfast determination. Ever-since that time, the firm has practically carried out the policy of rendering useful services in as many departments as possible to the Medical Profession as a whole, faithfully and conscientiously.

* * *

During the last Great War, the firm of Messrs: N. Powell & Co. rendered valuable service to Government. With ample resources at their command, they were in a position to equip several War-Hospitals within a short space of time. They possessed quite up-to-date Works, completely equipped with the latest labour-saving machinery. They had, besides, well-trained and greatly experienced workmen. They had plenty of space and above all, they had experience of several years in the manufacture of Aseptic Hospital Furniture &c. Thus, they were able to fit up many Hospitals, the first being the Lady Hardinge War Hospital, and then the Gerard Freeman Thomas War Hospital, the Colaba War Hospital and others. Government were pleased to entrust the work to this firm, as also that of equipping Hospital Ships, 'Loyalty' and 'Madras' and Base Hospitals in Egypt, Messopotamia &c. &c. Moreover, they treated a large number of British and Indian Soldiers, returned from the front, in their well-equipped ZANDER ORTHOPAEDIC AND MEDICO-ELECTRIC INSTITUTION. But to crown all, this noble work they did without taking any remuneration from Government.

* * *

The Secretary of State for India-in-Council, in recognition of their ability and fine workmanship, appointed them, since the year 1924, contractors for supplying artificial limbs and orthopaedic appliances to soldiers and officers belonging to the various Military Hospitals in India.

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In 1922, the firm added one more item to their manifold enterprises, viz: a Printing Press, to cope with their multifareous activities. They, again, own a completely equipped Medico-Electric institute for taking X-Ray diagrams and giving X-Ray and other electrical treatment, and possess Radium for giving Radium exposures in malignant cases.

* * *

In the beginning, although they had no encouragement at all, yet firm determination and unfailing enterprise brought them up to the place of leadership. A specially notable feature of their workmanship is that they are completely manufactured from start to finish in their own Workshop by Indian artisans and artists. As such, they were the first in India to send their Surgical Instruments to the World Exhibition, held at Paris, in 1900. The Committee there awarded them the much-coveted "Grand Prix" and at the same time put in a good word commending the superior workmanship of their products.

* * *

This, then becomes conspicuously true that the firm is progressive and is keeping abreast of the times, and shows careful concern about adding something new to the existing things. And for the last 46 years, the name of "Powell" has been recognised as a full guarantee of skill, knowledge, and honour, in the manufacturing of Chemicals and Pharmaceutical products. Surgical, Dental & Veterinary Instruments, Orthopaedic Appliances, Aseptic Hospital Furniture, Invalids Furniture, &c. &c.

* * *

We wish the new concern all success, and conclude by hoping that they will continue ever to serve their country, with the same love and zeal that they have evinced hitherto, and further extend the industry which has proved so useful in various directions to all sundry and in due time make available the shares of this Company to the general public by making the concern a public Limited one.

Association News.

THE MYSORE VETERINARY MEDICAL ASSOCIATION, BANGALORE.

The Fourth Annual Meeting held on 18th and 19th June, 1932.

The Fourth Annual Conference of the Mysore Veterinary Medical Association was held at 8 a.m., on the 18th and 19th June 1932, at "Mashie Lodge" Lalbagh Road, Bangalore, under the Presidentship of Mr. K. Krishniengar, G.B.V.C.. Superintendent of the Civil Veterinary Department, Mysore.

18th June 1932.

More than 75 per cent of the members were present. Among the distinguished visitors that attended the Conference were Messrs. S. P. Rajagopalachari, B.A., B.L., Revenue Commissioner in Mysore. B. T. Keshava Iyengar, Development Secretary, H. V. Krishniah, Director of Agriculture in Mysore, Muddukrishnappa, Assistant Secretary, Development Department, Dr. Badami, Principal, Agricultural School, Hebbal, Mr. Montero, Live-stock Expert, Mysore, Captain Martin, R.A.V.C., C. & M. Station, Bangalore, Dr. P. Srinivasa Rao, Editor, the Indian Veterinary Journal and President, All-India Veterinary Association, Madras Branch, Madras.

The function began with the taking of a photo of all the members and visitors present. Photo over, the gathering adjourned to the tastefully decorated central hall, where, the function began with an invocation by Mr. M. S. Murthy. Then Mr. K. Krishniengar, President of the Association, welcoming the visitors and members requested Mr. S. P. Rajagopalachari, to open the Conference. (Welcome Speech—Appendix A.)

The Mysore Veterinary Medical Association, Bangalore

The Fourth Annual Meeting held on 18th June 1932

Mr. Rajagopalachari declared the Conference open with an impressive and instructive speech. (Appendix B.)

Mr. S. D. Achar, the Honorary Secretary of the Association, then read the Annual Report of the Association, which showed an all-round progress and presented the financial statement of the Association. (Appendix C.)

The following important resolutions were then discussed and passed :—

1. *That this Association requests the Director of Agriculture to kindly move the Government to grant a subvention of Rs. 200 to this Association annually.*

Mover : Mr. K. R. Ramachandra Rao.

In moving the above resolution Mr. K. R. Ramachandra Rao spoke as follows :—" I beg to state that our Association was opened in May 1928, and from that time we are having several important functions in the Association and we wish that they should continue for a very long time. But without financial help it is very difficult to continue the activities of the Association. Also our department contains a very limited number of officers. What we are now paying will not be sufficient to meet even our legitimate expenditure in connection with our Annual Meetings, and since the Association has got several other duties also, such as the publication of pamphlets, etc., and as the Association has already had a kind and good recognition by the Government, we pray that the Government will kindly grant to our Association a subsidy of Rs. 200 annually. That the Association was very kindly helped by the Government with Rs. 1,000 in connection with the All-India Veterinary Conference that met in this City, is fresh in the mind of one and all assembled here. I hope therefore that the Government will extend their sympathy in this line also just to keep the Association going."

Seconder : Mr. K. Srikantiah.

The resolution was put to vote and passed.

2. *That this Association represents to Government to permit the officers of the Civil Veterinary Department to undertake private practice.*

Mover : Mr. K. Srikantiah.

Mr. K. Srikantiah in moving the above resolution said :—

" The resolution as it is, may not be very clear, and I would like to explain it further. So far, the officers of the Veterinary Department have not been allowed private practice, I mean to say, they have not been allowed to take any fees for services rendered out of their office hours. The department has been sufficiently old and I believe that to charge a fee to any man who comes for professional aid to the Veterinary Department is a matter of right. We are having almost always calls. We have been giving help free o charge even outside hospital hours. Our services have been required even at dead of night. Free service has a limit, I hope, and I think it is high time for us to get some remuneration from local ryots for the extra work we do. May I say, that my brothers in the Department are having the same feeling? Hence, I request them to support my proposition."

Seconder: Mr. K. R. Ramachandra Rao.

Mr. K. R. Ramachandra Rao in seconding spoke as follows :—

"I beg to state that, particularly in Hospitals in places where the cattle population is more the services of the Veterinarian are indented upon at all odd hours. We have no provision to charge fees for work done outside hospital hours, which medical men have. We feel that we are on most of the occasions placed in very awkward situations. We cannot demand anything for the service we render and at the same time we cannot refuse to attend to cases. With a view to find a way out of this difficulty and in the interest of our brother veterinary officers and the profession as a whole we may be permitted to levy certain scale of fees just as medical men."

Mr. S. D. Achar:—"I strongly support this for two reasons. Firstly certain payment is necessary to enhance the value of the services rendered (laughter). It is not always that a gratuitous service is considered at its true worth. Further, I wish to emphasise the fact that private practice by Veterinary Surgeons must be made not only permissable but even compulsory, as in the case of medical men. In the interest of the stock-owner himself I think it is necessary that a fee should be charged to him and regarding the scale of fees we may make an arrangement somewhat similar to that of medical men, that for night service being about double the fee charged for the day.

Mr. M. R. Chengeri:—"In supporting the resolution I would like to refer to the scale of pay to the Veterinary Officers in Mysore. I am pained to say that it is very poor and if the Government will not be pleased to grant them the privelege of private practice, I request that the Government will find their way either to double their present scale of pay or allow them fair extras for services rendered out of hospital hours."

Mr. K. R. Ramachandra Rao:—"Several years back when the department was yet in its infancy it was understood that the services of a Veterinarian should be entirely free for villagers, I believe, that time has gone. Now a Veterinarian is a prominent man everywhere in the Taluk and agriculturists are immensely liking him. Many a time, the ryots have willingly come forward to give us fees, but we are afraid to accept anything from them even though the fee may be for our attendance at our odd hours, since we have no rules to receive any remuneration. Under these circumstances, I believe there is no fear in passing an order to this effect. We, therefore, pray to the Government to improve our position somehow. We are not blind to the fact that the Government is not in a position, atleast at present, to give us anything more than what we are getting. Therefore, we, as a body, pray to the Government without risking the popularity of the department that the Veterinarians may be given the power to receive remuneration from the ryots for odd hours of work."

The resolution was put to vote and passed.

3. *That this Association represents to Government for an extension of Veterinary aid to the rural tracts and under village panchayats.* *Mover*: Mr. K. R. Ramachandra Rao.

Mr. K. R. Ramachandra Rao in moving the resolution said :—I beg to point out that the President has very vividly explained how important veterinary aid in rural parts is. Now, village panchayat being an important Local Body in rural parts, and I think, as almost all the departments are asking the help of village panchayat, the Veterinary Department at the same time may also ask for their help. In explaining this resolution, I would like to bring to the kind notice of the members present here what I have been actually doing in my own area. If you find it reasonable, this may be accepted and circulars issued to all the parts. I have toured all over Chikkaballapur and Gudibanda Taluks. I have requested the village panchayats there to reserve 3 percent of their annual income for the improvement of their own cattle. I have collected Rs. 380/- from Chikkaballapur Taluk and I have appointed at each hobli a trained compounder and asked him to submit to me a diary of his work every fortnight. He must go to villages and teach the ryot the method of castration. The operation is no doubt simple but it requires technical intelligence. The people who are castrating in a rude method can learn how to do it technically by the use of the machine the compounder takes with him. In a year he can visit every village half a dozen times, and will advise village panchayat to keep one best bull. If it is not possible, two or three village panchayats can join together and maintain a bull in a central area. This propoganda work I am doing in my area with the help of the revenue authorities. I am highly thankful to the Amildars Mr. Mallarajus and Mr. Venkatramiah of Chikkaballapur and Gudibanda Taluks respectively, who have been very helpful to me in my work. Coming now to the expenditure side, we are giving the compounder Rs. 15/- per month but by paying Rs. 20/- to each man we can have departmental salustries and they can be posted to this work. They will not only improve the Cattle

Breeding but also treat several simple cases. To do this the percentage of contribution from the village panchayats should be increased from 3% to 4 or 5%. I am sanguine that this too is possible. I wish that this scheme is extended to the whole of the province. To achieve this object, a Compounders' training class is very essential and therefore that class should be revived. I wish every friend of mine here will take the Co-operation of the Taluk Amildar and get this work done in his area. Our department is very popular in every corner and our advice is likely to be taken by all the ryots. Still, with the help of Amildars we can do our work to an appreciable extent. In Jamabandis we can give lectures on our work. In fact, I am distributing pamphlets to all villagers in my area. Those pamphlets are working well and the number of my pamphlets at present is seven. Unless this sort of work is done, it is impossible to spread veterinary aid to every nook and corner because the facilities given to the the veterinarian are getting less and less every year. We were getting our travelling allowances. Now, in several cases we are asked to curtail our tours. In my opinion, the most important thing is a strong circular to the Revenue authorities asking them to co-operate with us in our work. For such propaganda work of mine Major Simpson, the former Superintendent, was of very great help. The Association, to day, feels very much for his absence.

Seconder: Mr. N. Krishnamurthy.

Mr. N. Krishnamurthy in seconding said:—"I beg to give out the scheme I have advised in my taluk viz. Doddaballapur. In every hobli headquarter where there is a Revenue Inspector, a trained Salustry is kept. He is given such of the instruments as are ordinarily required. With this he will treat ordinary cases and promptly report the outbreaks such as Rinderpest and other diseases, because there will be *our agency* in that hobli headquarter always. During other periods, he will go round systematically into the village of that hobli and do castration work and treat other simple ailments. Now, owing to financial stringency we are not permitted to do sytematic touring. Therefore, if we are not touring also and if there is not our agent in taluk interiors, the ryots will forget us hereafter. Therefore, to keep that in continuity, if the Salustry is kept in every hobli just as a Revenue Inspector then the popularity of the Department will be continued. After all, the pay of the Salustry is Rs. 20/- and the revenue collection from the panchayat at the rate of 2 per cent from minor and 3 per cent from major hoblies will work out to about Rs. 400/- and that will be enough to meet the expenditure incurred in maintaining a Salustry. Under this arrangement a Salustry may be kept at all the hobli headquarters. With these words, I heartily support the resolution."

Mr. S. D. Achar.—"I further support this proposition very heartily. It is self-explanatory and I will not make much of it by still further explanation. In a word, I say, it is very essential and soon we must set to work on it."

The resolution was put to vote and carried.

The meeting was brought to a close by a hearty vote of three cheers to H. H. The Maharaja of Mysore and thanks for the Chairman proposed by Mr. M. R. Chengeri and there was very good response from the members present.

The afternoon function began at 2 P. M., under the Presidentship of Mr. K. Krishniengar, and the following professional papers were read and discussed:—

1. Preparation of "Sera and Vaccines" by Mr. S. D. Achar, Officer in charge, Mysore Serum Institute, Bangalore.
2. "Immunity" by Mr. P. U. Nair, Asst. Superintendent, C.V.D., Mysore, Bangalore.
3. "Johne's Disease" by Mr. K. Ranganatha Rao, Asst. Superintendent, C.V.D., Mysore, Bangalore.

Captain Martin, gave an excellent practical demonstration of "Dentistry in Horses" which was very much appreciated both by the visitors and members.

After 'tea' at 5 P.M., the proceedings of the day terminated.

19th June 1932.

The assembly met at 8-35 A. M. and the President, Mr. K. Krishniengar moved from the Chair resolution of condolence for the demise of Mr. V. S. Rajagopala Mudaliar, a member of the Association who passed away on the 1st of May 1931, and also for the death of Mr. C. S. Balasundaram Iyer, Member in Council, of Dr. Kunhi Kannan and Dr. M. K. Venkata Rao of the Agricultural Department.

The resolution was passed all members standing.

After several important resolutions regarding the work of the department were discussed and passed, the following Office-bearers were elected:—

Mr. K. Krishniengar	... *President.*
" M. R. Chengeri	... *Vice-President.*
" S. D. Achar	... *Secretary.*
" K. Ranganatha Rao	... *Treasurer.*
" K. Shrikantiah	*Managing Committee Members.*
" K. R. Ramachandra Rao	
" P. U. Nair	
" M. Subba Rao	
" T. V. Manikyaraj	

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Then the members adjourned for "Dinner" at 11-30 A.M.

In the afternoon, the members re-assembled to finish the remaining professional papers. The following papers were read and discussed :—

1. "Local Anæsthesia" by Mr. K. S. Gopal Rao, G.M.V.C.
2. "Treatment of Wounds with Glycerine" by Mr. N. Krishnamurthy.
3. "Tetanus in a he-buffalo" by Mr. N. Krishnamurthy.
4. "Quackery and its cruelty" by Mr. P. Veda Bhat, G.M.V.C.

After the discussion on professional papers was over, a draft scheme of the Mysore Veterinary Mutual Benefit Fund was discussed item by item and passed (Appendix E).

This over, after a congratulatory speech by Dr. P. Srinivasa Rao, Editor, 'the Indian Veterinary Journal,' (Appendix D) the members of the Association were 'at home' at 5 P.M., to Mr. S. D. Achar to express their pleasure at his elevation to the post of the Officer in charge of the Mysore Serum Institute, Bangalore.

Mr. K. R. Ramachandra Rao, Veterinary Inspector, Chickballapur, while proposing the 'Toast' spoke as follows :—

Gentlemen,

"In proposing the 'Toast' to the Honoured Guest of this evening, I wish to state that I extremely feel sorry for the absence of our beloved Superintendent, Major R. W. Simpson, M.C., G.B.V.C., who is the founder of the Mysore Serum Institute, Bangalore, and whose presence would have increased our pleasure all the more if he had remained in our midst this evening. Major Simpson started this Institute to secure a wider scope of learning and to increase the usefulness of the Veterinary profession to all the young Veterinarians of the State, and he did the same on a very well based foundation and future hopes. During his period of stay in Bangalore, whenever there was an opportunity for the Veterinarians to meet him in his Office, the first question he used to put was whether the visitor has seen the Serum Institute; if the answer from the visitor was negative, he would immediately lead him to the Serum Depot and explain all the technical work of the Institute. It was his ambition to bring the Institute to a good standard of work and popularity throughout India, and he did the same before his retirement from his Office. However, this Serum Institute was hitherto under the supervision of a Medical Officer and it continued in that stage for a couple of years with the hearty co-operation of Major Simpson with the said Medical Officer in all its activities and administration. To day, we see that this important Institute is placed in charge of a Veterinary Officer who is more fitted for the work and for which the whole

Association was longing for a long time. We must be thankful to our benign Government for having felt the keen feelings of ours and for having fulfilled our ambition before we made any strong attempt for the same. However, we hope that this important Institute will develop day by day in its activities in all the directions under the able guidance of Mr. S. D. Achar, who is an Officer of very great patience and enthusiasm, who will always go hand in hand with the Superintendent, Civil Veterinary Department, in his routine work.

I would like to mention that Mr. S. D. Achar can hope to get the true and sincere co-operation of every Veterinarian in the Mysore State, and the Association hopes to be benefitted by the best knowledge and advancement in the scientific work hereafter.

With these few words of mine, I wish long life and prosperity to the chief guest of the evening and we shall all drink to the health of Mr. S. D. Achar.

I should thank you all Gentlemen for the hearty co-operation so kindly extended to me in today's work."

This was supported by Mr. K. Srikantiah.

Mr. S. D. Achar, who received an ovation on rising, was visibly moved and responded to the toast suitably, in the following words:—

Gentlemen,

" I am indeed most grateful to you for all the nice things you were good enough to say of me and for the expression of confidence in me. It is an unexpected honour which I fully appreciate and for which I thank you.

Permit me to say a few words on the origin and development of the Serum Institute in Bangalore. Major Simpson who had done more than any other man for promoting the work and worth of the Veterinary Department in Mysore and whose name will be dearly remembered for generations to come in connection with every-day activity of our profession in Mysore, is intimately associated with this as in everything else. Without exaggerating, I may go further and say that he is the prime cause for bringing into existence the Serum Institute in Mysore. He popularised the S. S. method of inoculation to such an extent, that production of R. P. Virus locally became imperative and he got the Virus Depot started and when I was fortunate enough to come in handy, he selected me to do the work. Soon, I was sent to Lahore for Post Graduate Course and next on deputation to Muktesar. The Government sent Dr. Parthasarathy and me to Muktesar and on our return we were engaged in the production of R. P. Virus and Anti R. P. Serum. From small beginnings the Institute grew to its present proportions. Knowing Major Simpson as I do, by my close association with him for over 20 years, I dare say he was looking forward to this day when he started the Virus Depot. He is gifted with such vision. On my assuming charge of the Serum Institute he has written to me a very nice letter which confirms me in this belief.

Gentlemen, I am fully aware of the responsibilities attached to my Office and realise the arduous nature of the work entrusted to me.

But, with the help and co-operation of Mr. Krishniengar and everyone of you I shall endeavour and hope to render a satisfactory account of myself.

As Charles Dickens said "I thank you, Gentlemen, again and again a hundred times with the energy of a thousand thanks in each one."

With this pleasant function, the meeting closed *Sine die.* But as the members showed a desire to visit the Serum Institute at Hebbal, the Session was extended by another day.

20th June 1932.

At 3 P.M., the members visited the new Serum Institute. Major C.A. Murray, R.A.V.C., Deputy Assistant Director of Veterinary Services, Madras District, Bangalore, also visited the Institute. Special demonstrations were held in the several sections of the Institute, viz. Laboratory, Serum, Virus and Post-mortem Sections.

At 5 P.M., Dr. S. D. Achar was 'at home' to Major Murray and the members. This over, a group photo was taken and the members dispersed with joy at what all they have done and seen during the Conference.

APPENDIX A.

THE MYSORE VETERINARY MEDICAL ASSOCIATION, BANGALORE,

Fourth Annual Meeting held on 18th June 1932.

WELCOME ADDRESS.

BY

MR. K. KRISHNIENGAR, G.B.V.C.

GENTLEMEN,

It gives me great pleasure to welcome all of you to this, the Fourth Annual Meeting of the Mysore Veterinary Medical Association. I am grateful to you, Sir, and thank you, on behalf of all the members assembled here, for the honour you have done us, by having consented to open this Conference to-day.

I am indeed proud to be able to mention that Mysore is the first among the Indian States where an Association of Veterinarians has been formed, and it is gratifying to note that the work of the Association is progressing very satisfactorily and our deliberations during the previous meetings have been very instructive. This, I dare say, is wholly due to the members continuing to take a sustained interest in the work of the Association.

The presence to-day of the Revenue Commissioner and the Director of Agriculture and the Development Secretary to the Government of Mysore in our midst is significant of the great interest and sympathy of our Government in the profession in Mysore.

Many of you, my friends of the Civil Veterinary Department, have come from the remotest corners of the State at considerable expense and great inconvenience, and this gathering of the veterinarians (in such large numbers) is an eloquent testimony to the feeling of unity that exists among the members and that too at a time when Government felt compelled to curtail the facilities given to us in the past, in the shape of travelling allowances.

I extend, on your behalf, a hearty welcome to Capt. Martin of the Army Veterinary Corps, Dr. P. Srinivasa Rao, the Editor of the "Indian Veterinary Journal", the outside Delegates, and the many gentlemen, who have responded to our invitation and made it convenient to join us here to-day.

This Association was started in May 1928, with a view to create an *esprit de corps* among the members of the profession in the State, to discuss problems of professional interest, to exchange notes and thus to equip ourselves to render efficient service to the State. Supported by Dr. Coleman, the Director of Agriculture in Mysore, the Association was, in the first year of its life, recognised by Government as a Scientific Association. During this short period of four years, this Associatlon had the good fortune to achieve some of its important objects, to mention a few :—

(1) It was able to invite the All-India Veterinary Association to hold its Annual Conference at Bangalore, which would not have been possible but for the support of our benign Government, the District Boards and Municipalities and the ryots in the State.

(2) We were able to secure for the first time, the award of a Damodar Doss Scholarship for foreign studies, for a member of the Veterinary Profession.

(3) The Mysore Serum Institute was developed into a first class Institute and has been able to manufacture and supply not only virus and serum for Rinderpest, but has during the year, undertaken the manufacture and supply of Black Quarter filtrate and serum, H. S. serum and Vaccine and Sheep-pox vaccine for use in the field, and I am glad to tell you that a member of the Veterinary profession is to-day directing the activities of this Institute.

(4) Two Research posts sanctioned by the Government for the investigation of several animal diseases in the State, have been continued.

(5) As a result of the agitation by the Association, to appoint qualified graduates for Veterinary Service in the Municipalities, the Mysore Municipality has appointed a qualified Veterinarian for part-time work having recognised the principle, and I hope that the Bangalore Municipality, which is still employing an unqualified man will soon appoint a full-time qualified man.

Since our last meeting, it is very encouraging to note that Goat virus for protecting cattle against rinderpest has proved efficacious and the re-tests with bovine virus, of the Amrit Mahal herd inoculated with Goat virus, have demonstrated that a solid immunity can be conferred by Goat virus alone. It is contemplated to substitute serum simultaneous method of protection against rinderpest, in the near future, by Goat virus alone, which will be more convenient and economical by saving the large expenditure now incurred on serum.

Before concluding, I once again thank you, Sir, for having so kindly consented to open this Conference to-day, and I feel that it augurs well that the Head of the Revenue Department in Mysore should open a Conference of Veterinarians, thus demonstrating the triangle of economic prosperity of the country consisting of land, labour and live-stock.

I now request you, Sir, to open the Conference.

APPENDIX B.

THE MYSORE VETERINARY MEDICAL ASSOCIATION, BANGALORE.

Fourth Annual Meeting Held on 18th June 1932.

OPENING SPEECH.

BY

MR. S. P. RAJAGOPALACHARI, B,A. B.L.,

Revenue Commissioner of Mysore.

GENTLEMEN,

I am greatly obliged to Mr. Krishna Iyengar for asking me to open the deliberations at this Session of the Association. The month of June is a very busy month for Government officers due to the Budget Session of both our Assemblies, and I was somewhat reluctant to assume this responsibility just now. The friendly insistence of Mr. Krishna Iyengar and my own desire to demonstrate my sympathy with the work which your Association stands for, made me yield to his persuasions. Mr. Krishna Iyengar has told you how appropriate it is that the Head of the Revenue Department should be associated with your work. I well remember the time when the Department was first organized and put under the charge of the then Revenue Commissioner, Mr. A. Rangaswami Iyengar, who was responsible for laying the foundations of the Department on secure lines. This close association between the two departments went on till about 1920, since when you have been sailing under different colours.

You have met before under the auspices of eminent men and the Seventh Session of the Conference of the All-India Veterinary Association which was held at Bangalore in December 1930, was presided over by Col. A. Olver, C. B., C. M. G., Expert Advisor in Animal Husbandry to the Government of India. Practically, all important subjects were fully thrashed out then, and you should not therefore expect me to add much to what those experts have spoken to you. I shall therefore confine myself to a few general observations about the activities of the Department from a lay man's point of view.

An Association of this kind, I need not say, is not only of great educative value in that it brings before the young men starting their careers the accumulated results of experiences and studies of the various members of the profession, but it also adds to the *esprit de corps* of the Service. I understand, this Association was started in 1928, and has been having annual gatherings with great success and benefit. It had the honour of inviting the All-India Association for its Seventh Conference in this very place two years back. I wish the Association every success in its endeavours.

The importance of the Veterinary Department to the agriculturist cannot be over-estimated. To a purely agricultural country, like Mysore, the problems regarding livestock must be all important, as the prosperity of the livestock is a necessary condition for the agricultural prosperity of our ryots. Our Government has been following a steady policy of expansion to meet the increasing demands for medical aid for cattle. The main purposes of an organized Veterinary Service are control of the several contagious diseases embracing the three-fold aspects of prevention, protection and cure and improvement of livestock generally.

Firstly, as regards prevention of diseases, during the past ten years, Veterinary Science all over India has made great strides. But, the chief achievement so far as the State is concerned is the manner in which Rinderpest has been kept in check. In this field, we may say boldly that Mysore has led the way. Rinderpest is the most baneful of the cattle diseases, and this has been successfully tackled. Mysore was the first to try the Serum Simultaneous method on a large scale and demonstrate its efficacy to the other parts of India. I see from the latest report of the Department that the total number of animals inoculated during the last five years by this method reaches the total of 6,29,000 head of cattle or about 12½ per cent of the total number of cattle in the State including buffaloes and the mortality from rinderpest has perceptibly fallen down. Similarly the fatality from Anthrax, Black-quarter and other parasitic diseases is very much minimised by the activities of the Department. But, we cannot be content with this. We must push on, taking the ryot into confidence and should not rest until the least chance of the dire diseases has been completely removed.

A connected achievement of the Veterinarian in Mysore is the preparation of Rinderpest Serum. Till very recently, the manufacture of sera and vaccines was carried on only in the Imperial Institute of Veterinary Research at Muktesar; but now, we are manufacturing anti-rinderpest serum and virus, not only for meeting our own requirements, but we are also supplying the Presidency of Madras and the States of Hyderabad, Cochin and Puducottah, and the production in the Mysore Institute is about one-third of that made in Mukhtesar. With the placing of the Serum Institute on a firm basis, as the Government intend to do, we can surely increase our serum production materially.

Another direction in which the Department has interested itself, though not perhaps with equal success, so far, is the improvement of the breed of cattle. The two methods by which the object has been sought to be achieved are the maintenance of breeding bulls and he-buffaloes in some of the dispensaries for service and the extirpation of scrub bulls by an intensive compaign of castration. As regards this latter, though people took to it apathetically at first, they have now been convinced with the simplicity of the operation. The castration figures during 1930—31 rose so high as 43,504. But, I feel we have not yet touched the fringe. The number of breeding bulls and he-buffaloes stationed at dispensaries was only 12 and 2 in the year 1930—31, and I believe the figure may be standing at that even now. But the policy now being adopted of breeding a large number of Amrit Mahal Bulls on scientific lines at Parvatharayanakere Farm and distributing them all over the State, through the medium of Local Bodies, is expected to bring the bull within a reasonable distance of every village, in course of time.

The benefit of the work done by you, both in Research and in the Field can only be realised to the fullest extent by propaganda. Without assistance and co-operation of the agriculturists themselves, all our work is bound to be somewhat futile. It is of the utmost consequence that such co-operation should be enlisted in an ever-increasing degree. An intensive compaign of propaganda seems to be urgently called for. The Veterinary Inspectors, when they halt in villages, may, as far as they can find time, collect the villagers in the evening and talk to them of the general features of some common diseases, the simple methods by which they could be prevented and simple remedies, if any, by which they can be cured, when actually they come. Similar pamphlets in Kannada may be distributed broad-cast in the villages. Lectures through lantern slides would be a very potent factor in moulding the mind of the illiterate ryot. It appears the Madras Veterinary College have manufactured a set of lantern slides in an attractive style on some of the important diseases. But, it would not be enough to have one set or even a dozen sets, if we have to reach every interior corner. I leave it to the Department to consider this suggestion seriously and make a beginning, if they have not already done so. It is no doubt a matter of cost, but it appears to me to be a matter of imperative necessity and it admits of gradual expansion and is worthy of a trial.

Before closing, I wish to urge the necessity of harmonious relations between the officers of the Veterinary and Revenue Departments. It is a matter of common knowledge that in remote villages, the ryots, out of ignorance or superstition or due to mischievous influence, do not readily come forward with their cattle for inoculation when rinderpest breaks out, and in a body refuse to comply with the requisition of the Veterinary Officer. It is to combat and overcome this attitude that we were forced to legislate in the matter, making it penal not to submit their cattle for treatment when the Veterinary Doctor considers it necessary in order to check the spread of the epidemic. But, many a ryot is not aware of the legislation with the result that he still resists. While, on one side, prosecution is launched upon for non-compliance with the provisions of the Regulation, a complaint is usually made that there was no co-operation from the Amildar or some other Revenue officer. This state of things could be avoided if the Veterinary Officer takes the local Revenue officer with him beforehand to the place where he expects or finds resistance, and he has a far better chance of success, with comparatively less irksomeness to the ignorant ryot.

Similar co-operation is necessary in connection with the closing of Cattle Fairs. I feel that in recommending the closure of jatras or cattle fairs on the apprehension of an epidemic breaking out or spreading thereby, some considerateness is required to be exercised by the Veterinary Officer. He must remember that the jatra or cattle fair is a source of revenue—sometimes very material—to a Muzrai Institution or a Local Body, and also the place where the ryot usually disposes of his stock. While, of course, the preservation of cattle in a healthy state and the prevention of an epidemic are of paramount importance, it is very necessary that remote contingencies should not be given too much prominence, as is sometimes done. The Veterinary Officer would do well in such circumstances to have a full and frank talk with the chief Revenue officer concerned before he makes up his mind as regards the holding of a particular jatra.

Another aspect of such co-operation lies in utilizing the help of the Village Panchayets in the task of the improvement of cattle. There is great scope for enlisting the services of the Village Panchayats in the matter of increasing the number of Veterinary dispensaries, in improving the village pasture lands for the benefit of the cattle and in various other directions. It may be possible to group together half a dozen Village Panchayats and to start a dispensary out of their funds. For the present, both the Departments may concentrate on having such dispensaries in the Taluks in which there are no regular dispensaries at present. The improvement of the grazing fields and the gomal lands, most of which are now in a neglected condition, is also very important, and I wish that the attention of both the Departments is concentrated on this matter.

Before concluding, let me express my pleasure at my having been invited to this function and to meet so many of the officers of the Mysore Civil Veterinary Department.

APPENDIX C.

THE MYSORE VETERINARY MEDICAL ASSOCIATION.

Annual Report of the Managing Committee for the Year 1931-32.

GENTLEMEN,

As Secretary of the Managing Committee, I have great pleasure in placing before you the following brief report of the working of the Committee during the year.

There are 82 members on the roll at the end of the year including 7 new admissions.

I took over charge of the Secretaryship from my predecessor in the last week of October 1931. Since then, 3 Committee meetings were held with an average attendance of 7 members at each meeting and 2 Sub-committee meetings were held for framing rules in connection with the Mysore Veterinary Mutual Benefit Fund.

During the year, Mr. K. Krishniengar was the President and Dr. M. R. Chengeri Vice-President. Mr. Manikya Raj was elected a member of the Committee in place of Mr. K. Krishniengar who became Ex-Officio President.

It is indeed most gratifying to note that several members readily cleared all their arrears of subscription and some even paid up arrears of contribution thus helping considerably the Association whose finances had been depleted owing to the heavy expenditure on account of the holding of the All-India Veterinary Conference in the preceding year. My thanks are due to all the members who even in these days of financial stringency so generously responded to my appeal.

I herewith submit a statement of the receipts and expenditure of the Association, for the year 1931-32.

BANGALORE,
Dated, 17-6-32.

S. D. ACHAR,
Hon. Secretary.

A/c of Receipts and Expenditure between October 1931 and 31-5-1932.

				Rs.	A.	P.
Admission fee				14	0	0
Subscription				226	0	0
M. S. E. F.				6	0	0
Advance recovered ...				16	0	0
S. B. Interest				34	1	10
Opening balance	135	6	0			
In S. B. ...	14	1	0			
In M. B. ...	13	2	6			
	162	9	6			
				162	9	6
				457	11	4

				Rs.	A.	P.
Balance due to Modern Hotel (A.I.V.C. A/c) ...				150	0	0
Stationary				12	3	3
Printing and typing ...				11	12	0
Postage				0	9	2
Incidental charge debited by Bauk				1	0	0
Lunch				16	0	0
Cash balance :						
Mys. Bank ...	198	15	7			
S. Bank ...	48	2	10			
With the Secy.	9	4	3			
Cash on hand ...	10	6	3			
	266	2	11			
				266	2	11
				457	11	4

BANGALORE,
Dated, 17-6-32.

S. D. ACHAR,
Hon. Secretary.

APPENDIX D.

THE MYSORE VETERINARY MEDICAL ASSOCIATION, BANGALORE.

Fourth Annual Meeting held on 18th and 19th June 1932.

SPEECH BY

MR. P. SRINIVASA RAO, G.M.V.C.,

Editor, The Indian Veterinary Journal, delivered at the closing of the Session.

MR. KRISHNIENGAR AND GENTLEMEN,

I thank you for cordially inviting me to this meeting of your Association. That only shows the amount of love and affection you bear towards the organ of your Association, the Indian Veterinary Journal. Since you are at the end of two days' crowded programme and since another pleasant function to honour Mr. S. D. Achar, is awaiting your presence in the other hall, I do not want to occupy much of your time. It is my proud privelege to-day to convey to you the warm and fraternal greetings of your confreres in British India and to congratulate you on your very successful and useful Session.

As I have expressed to you on a previous occasion from this very platform, it is quite impossible for me to think of your Association as separate from the Mysore Civil Veterinary Department as the interests and achievements of both are intertwined and interdependent. Coming as I do from British India, I am overjoyed to see that the Head of the Department and the officers of the Civil Veterinary Department evince such keen interest in the welfare of the Association advancing the interests of its members, which in turn, contributes to the high and efficient work of the department, to the common good of the ryot. This is an ideal, which, I would heartily commend to the authorities in British India and other States, and I wish they would do well to copy.

Mysore has been the premier State in India to tackle every question for the advancement of Veterinary profession, by opening a Serum Institute of its own, by holding the All India Veterinary Conference within three years of the starting of the Mysore Veterinary Medical Association and now by trying to use "goat virus" for the immunisation of cattle against rinderpest. I wish every province copies Mysore in this method of protection just as in Serum. Simultaneous method of inoculation, since it would involve a great saving to the Government especially in these days of financial stringency. I am glad that the Serum Institute is now manned purely by veterinarians and I congratulate Mr. S. D. Achar who started the Institute first for virus production, has now been appointed as the Superintendent of the Institute. I feel glad to learn that you have begun to prepare now H. S. serum, Bl. Qr. filtrate and serum and Sheep-pox vaccine and I feel sure, knowing Mr. Achar as I do, that under his guidance the Institute will prove of maximum benefit to the profession and the ryot alike.

There is no doubt, much discontentment prevails in the rank and file of the Veterinary profession here, as every where else, regarding pay. But that is no reason why you should slacken your individual effort to raise the standard of the profession by honest and steady work, as the Head of your department, Dr. Coleman whom we miss here to-day, said to you when this Association was started. 'It must be your attitude, that whatever work you do get into you must do your best in that work. Then, we as a profession, will soon occupy a worthy place in the community.' At such a time of financial stringency as the present and when even the travelling allowance that you used to get usually for attending your meeting has been denied to you this year, your holding this meeting with such large members as in normal time and with such a crowded programme, is an earnest proof by itself of your keenness to do your work to the best of your ability. I congratulate you on this.

We owe a deep sense of gratitude to Major Simpson who was the guiding star of your profession here so long, who has organised the department to the present condition and who was the founder of this Association. We feel sure, Mr. K. Krishna Iyengar as the Head of the Mysore Civil Veterinary Department will still further consolidate the great and useful work done by his predecessor, to earn for the department an enviable name for itself among the Veterinary Departments in the world by its far-seeing and progressive policy.

I feel glad to express my heartfelt thanks to you all, on behalf of the profession, for the ready response you gave to my appeal to subscribe for the Indian Veterinary Journal when your Association was started four years ago. But I am regretfully surprised at your apathy towards the Journal, of late. The whole department subscribed in a body at the first instance, but now, nearly 20% of the profession are still thinking of subscribing for the journal. Every one in this hall knows that the journal has been championing the cause of the profession and if we have gained anything for our profession from the Government it is due to our agitation in the pages of our journal. So I appeal to you once more to strengthen our hands to continue the good work we have been doing not only by subscribing to the journal one and all, but also by contributing professional articles.

Once more I congratulate you on the very successful session of your meeting.

APPENDIX E.

THE MYSORE VETERINARY MUTUAL BENEFIT FUND, BANGALORE.

The Veterinary Mutual Benefit Fund introduced on.........

1. *Eligibility.*—Veterinary Surgeons, Salustries, and Veterinary Compounders and permanent ministerial and other officials of the Veterinary Department in the State of Mysore including C. & M. Station, Bangalore, whether in Government Service or not, and under 50 years of age, are eligible for admission to membership.

2. *Minimum.*—100 members.

3. The Official year of the Scheme will be the Calendar year, from 1st January to 31st December.

4. Two classes of members come under this Scheme (A. & B.):—

Class A.—Those that pay a monthly premium of Re. 1.

Class B.—Those that pay a monthly premium of As. 8.

5. *Fund*—The Fund will be under the management of a Directorate consisting of 5 elected members, one of whom will be the President, another will be the Managing Director and the third the Treasurer.

6. *Admission Fee.*—(*a*) The appllicant is required to send Rs. 5-8-0 only with his proposal towards the nucleus of the Fund and to cover the incidental expenses to the issue of certificate. B class members to be permitted to pay admission fee in two instalments in 6 months.

(*b*) The Directors may reject any application without assigning any reason whatsoever, in which case, the admission fee paid by the applicant will be refunded less the Money Order commission.

(*c*) No person can hold more than one certificate under this Scheme.

7. *Medical Examination.*—No member is required to undergo Medical Examination, but one should be in sound health at the time of submitting his application for membership.

8. *Issue of Certificate.*—On receipt of application together with the admissision fee in full the Directorate will issue on acceptance, a certificate signed by the President and the two Directors.

N.B.—A Duplicate copy of a certificate in place of the lost one may be obtained on payment of Re. 0-8-0 (Annas eight only).

9. *Maturity.*—The policy matures on the completion of 15 years or at death whichever is earlier, when option is given to the policy-holder either to retire by getting 75% of the benefit of the Scheme or

to make the full benefit available to his nominee after his death. In the former case intimation of retirement should be notified within 15 days of the completion of 15 years.

N.B.—When a member dies within 183 days from the date of issue of the certificate his nominee will be entitled to a sum of Rs. 50 provided the premia and other dues had been paid regularly so far.

10. *Monthly Fee and Annual Fee.*—Every policyholder shall remit one Rupee, if of Class (A) and Annas 8 if of Class (B) every month before the end of the month up to 15 years from the commencement of the policy.

Besides, every policyholder of either class shall pay an annual fee of Re. 1 towards postage and other incidental charges.

Those admitted during December are, however, exempted from payment of annual fee for that calendar year.

11. *Default.*—On the failure of any policyholder to remit the monthly premium or the annual fee as per rules, the policy shall stand lapsed automatically.

12. *Revival.*—If, however, within 3 months from the date of lapse any substantial cause is given for non-payment, the policy may be revived at the option of the Directors, on payment of a revival fee of annas four by members of either classes together with arrears of dues and a late fee of one anna per rupee.

13. *Claims.*—Under the Scheme, death of a policyholder of Class (A) will entitle the nominee to a relief of a sum of Rs. 500 while that of Class (B) to a sum of Rs. 250, the remittances being made at the cost of the nominees.

14. *Nomination.*—Every policyholder is entitled to appoint his wife or children as a nominee free of charge. In case of nomination of any person other than the above, a fee of Rs. 3 should accompany the application of nomination by the policyholder irrespective of the class he belongs to.

15. *Reserve Fund.*—The Directorate maintains a Reserve Fund for emergency purposes and this Fund will be invested in a recognized Bank.

16. *Compassionate Gratuity.*—Should a member who was paying all premia and dues regularily, suddenly fall seriously ill, or become crippled or permanently incapacitated, and has no resource to pay, he will be exempted from further payment at the discretion of the Board of Directors; and his nominees will be eligible for the following gratuity :—

1. In case of completion of payment for at least 5 years .. .. Rs. 100.

2. In case of completion of payment for at least 10 years .. .. Rs. 200.

Half of above rates for members of Class " B ".

N.B.—It is obligatory on the pari of such disabled members to intimate the Managing Director, of his liability as soon as possible with the necessary Medical Certificate of such disability for the exemption.

17. *Death Report.*—Intimation of the death of a member must reach the Head Office within 3 months of the date of occurrence; otherwise no claim will be entertained.

18. *Proof of Death.*—Before the receipt of the claim amount the nominee should submit to the Head Office, as *Proof of Death* of the certificate-holder, a certified extract from the Birth and Death Register or a declaration of death signed before a Magistrate.

19. *Address.*—Any change in address of the members must be notified at once to the Head Office of the Company.

20. *Suicide.*—Suicide does not cause forfeiture of Certificates after they have been one year in force from the date thereof.

21. *Progress Report.*—An Annual Report showing the number of members on the roll, and the actual amount paid to the claimants will be published and a copy thereof supplied to every certificate-holder together with a certified balance sheet.

22. *Alteration of Rules.*—The Directorate reserves the right to change these Rules from time to time at its own discretion without prejudice to the rights of the existing members. But such changes will be duly intimated to the Members.

23. Annual meeting of certificate holders.

24. Election of Directors once in three years.

THE BOMBAY VETERINARY GRADUATES' ASSOCIATION.

PRESIDENTIAL ADDRESS.

By

KHAN SAHIB N. D. DHAKMARWALA.

At the Annual General Meeting held at the Gokhale Education Society's Hall, Parel, on 26th December 1931.

Gentlemen,

On behalf of the Members of the Managing Committee of the Bombay Veterinary Graduates' Association it gives me great pleasure in asking you to adopt the Annual Report for the year ending 31st December 1930. When the last Annual General Meeting of the Association was held in April 1930, I was unable to preside at its function owing to my sudden and serious illness. But those present on the occasion were kind enough to pass a resolution offering prayers for my speedy recovery and also re-electing me as the President for the fourth time. I need hardly say that I had been greatly touched by that resolution and I deeply appreciate your kindness in re-electing me as President. Although late, I take this opportunity to-day in thanking you from the bottom of my heart for the affection, goodwill and confidence reposed in me. If I have been able to do something for our Association by continuing to preside at the meetings of the Managing Committee and otherwise, the credit goes to all members who have given me every support from time to time. I am always ready and willing to render all possible help and assistance to the Association.

The Annual Report deals fully with the details of the work done and shows results, which, as you will notice, are of very little material change from those of its predecessor. There has been a decrease in membership, and the non-payment of subscriptions when due, still continues. Also members do not show any enthusiasm in sending papers and articles useful to our profession. I therefore again appeal to you to join as members and take a keen interest in the Association's work.

Gentlemen, it is customary for the President to suggest any points of importance with regard to its future growth by a programme of carrying on our activities in an increasing manner. We therefore meet again in this Annual Conference to consider measures which will lead to further improvement of our Association. I am glad to see that our Annual Meetings have continued to attract an increasing number of members. We have to discuss the many urgent and pressing problems connected with our profession in this Province. It is not enough to simply pass more and more resolutions, but we should do some concrete work useful to our profession.

Gentlemen, at the beginning of the year under review there were 136 members on the roll and at the close of the year there were 133 members thus there was a decrease of 3.

This is not satisfactory. We want many more to join. During the year under report 4 meetings of the Managing Committee were held. A letter was received from the General Secretary, All-India Veterinary Association to send delegates to the All-India Veterinary Conference to be held at Bangalore during Xmas holidays of 1930. Accordingly the Managing Committee deputed Messrs. Laud, Sathe, Kulkarni, M. G. Gadag, Sapre and Date. Besides this 20 more attended the Conference from the Bombay Presidency and they reported that the following important resolutions were passed there :—

(1) That this Conference requests the Provincial Governments and the Indian States to take early steps to improve the

pay and prospects of the members of the Subordinate Veterinary Services, having regard to their standard of education, as in the matter of initial pay these Services have been placed on a lower scale than similar Services.

(2) That this Conference requests that greater facilities may be given to Veterinary Graduates for Post-Graduate study by means of study leave, scholarships and by deputations for special study in the interests of Veterinary advance in India.

The Managing Committee resolved to pay actual travelling allowance to members attending the meetings. Messrs. Laud, Balakund, Murgod and Sathe read prefessional papers at the Conference.

Gentlemen, during the year under review the total receipts amounted to Rs. 451-8-10 which added to the balance of last year viz.. Rs. 1,023-1-9 amounted to Rs. 1,474-10-7, and the expenditure was Rs. 403 only. Thus the balance at the beginning of the current year was Rs. 1,071-10-7.

Gentlemen, the utility of such a function as the present one does not consist in merely enumerating the variety of activities summed up in the Annual Report, but it enables us to take stock of our present position, because there is still much to be done in extending the scope of our work. These Annual Meetings are serving a useful purpose because there are many veterinary problems which are national in their character and there is need for the Annual Gathering of the members from different districts for giving their experience and for co-operating in the formation of measures for the prevention of disease and for improvement of the live-stock of the Province.. Such gatherings are also of great value in serving to unite the members from different districts. With regard to the resolution passed by the All-India Veterinary Conference in connection with the improvement of pay and prospects of the members of the Subordinate Veterinary Service, it may be remarked that such resolution has been passed every year without any progress, because many of the Provincial Governments put off this important question on the plea of financial stringency. However, all that we could do, was to appeal again to the good sense of the higher authorities. Because no group of individuals can expect to maintain their status and improve their prospects without continued effort and propoganda work. In my opinion the advantages of better contact between Heads of the Department and our Association require no emphasis, since its absence becomes responsible for many misunderstandings and drawbacks and thus the feeling that our profession is counted for little. This should be removed. The plea for more adequate veterinary service in India is of special importance when the welfare of our 90% of the population is bound up with the welfare of the cattle. The ryots depend upon efficient and healthy cattle for work in the fields and for food.

An epidemic of serious cattle disease is one of the most tragic things that can befall him. Although the Royal Commission on Agriculture recommended that there should be one Veterinary Officer to every 25,000 animals in every Province, in Bombay Presidency there is probably only one to 100,000 animals, in Bengal 1 to every ½ a lakh and in Madras 1 to every 2 lakhs! An immediate increase seems to be out of the question because although Government are sympathetic, there are no funds.

Gentlemen, in connection with another resolution passed by the All-India Veterinary Conference that greater facilities should be given to Veterinary Graduates for Post-Graduate study by means of study leave, scholarships and deputation. I am of opinion that facilities should no doubt be provided by Provincial Governments every year as funds allow and subordinate officers who have been toiling for years in the Department and who show a special aptitude for higher study and who wish to specialise themselves in particular branches of Veterinary Science with a view to promotion in higher posts, should be encouraged to do so because such officers have been refused preferments on the sole ground of their want of Post-Graduate study in a foreign country. This matter deserves favourable consideration at the hands of the Agricultural Research Council. Besides this, there is only one Veterinary Research Institute in the whole of India *viz.*, at Muktesar. Such a state of affairs in a pre-eminently agricultural country cannot be tolerated. Every major Province should have its own separate Laboratory to carry on research work bearing on its special condition and also manufacture sera and vaccines required for it. The College authorities should insist on this question every year until a Research Laboratory is sanctioned.

Gentlemen, following the traditions of past years in addressing you at the Annual General Meetings, I propose to ask you to consider in its broadest aspect a subject in which I take a great interest *viz.*, the problem of milk supply in towns. In the short time at our disposal I do not wish to do more than touch some important points of this great problem, in fact, it would be impossible to do more than a bare justice to a subject so contentious from a business point of view and so hemmed about with financial difficulties. In this country our methods of approach to this problem may be entirely different to those found best in Europe or America but there are certain fundamental facts which we must keep in mind if we are to view the subject in an intelligent way. Firstly, one must realise that there is very little new in this desire for dairies. They have been a source of worry for many years and they have taxed the brains of pioneers. But are we as Veterinarians giving the right lead to the people who need these dairies? We cannot surely do better than to study the way in which other countries have faced and are facing these problems, which in India are in many ways analogous to those of America. Now let us consider how we may help to the greatest advantage. First a large tract of land is necessary to provide for the expansion of the trade. Bombay consumes more than 9000 maunds of milk a day and pure milk cannot be had for less than six annas per seer. I give rough details of the scheme of a model dairy farm for Bombay costing about Rs. 50,000 to 1 lakh which capital if raised by shares and worked on scientific lines ought to bring to the investors an annual profit of more than 25½%. The farm should be located somewhere near Chimboor with hygienic stability and grazing conditions for the cattle. The farm should be under the management of a resident Dairy Expert. Milk should be transported by Motor Vans twice a day from the farm to a shop in the heart of the City where it should be sold fresh from the tap at 4½ annas a seer to retail customers only. The first shop should be situated at Grant Road. The milk should be cooled in cold storage plants before leaving the farm and should also be kept in cold storage at the shop. Owing to short distance of transport there is no necessity of pasteurisation. As soon as the first milk shop in the town is working properly, further distributing centres should be opened in other parts of the City and eventually arrangements made for house deliveries in sealed bottles. With the expansion of sales in town the herd of the farm should be increased as desired. We should also give all possible assistance to suburban dairymen to improve their present economic condition and if they submit to instructions in modern dairying methods and adopt the advice of the Farm Superintendent their produce should be brought at a fair price for sale through the agency of the farm. A healthy buffalo yields about 2000 seers of milk per year. It costs As. 12/- a day to feed taking the cost over a whole year including the dry period. For 100 buffaloes, in the beginning, about 50 acres of land will be required. The following financial statement will show the income and expenditure.

INCOME.	Per annum. Rs.
Farm of 100 buffaloes giving 2000 seers of milk each per annum, or 200,000 seers at 4½ annas.	56,250
Profits from sub-dairies	5,750
Total ...	62,000

EXPENDITURE.

Food at 12 annas a head, per day ...	... Rs. 27,400
Rent of land and building ...	... " 3,600
Salary of Superintendent ...	... " 4,800
Pay of a Clerk	... " 720
Pay of 15 menials	... " 4,500
Motor van including driver ...	... " 3,000
Shop rent and staff in town ...	... " 3,000
Office contingencies	... " 2,980
Total	... Rs. 50,000

Rs.	
62,000	Income.
50,000	Expenditure.
12,000	Gross profit.

CAPITAL EXPENDITURE.

100 head of buffaloes at Rs. 250/- each	... Rs. 25,000
2 Stables	... " 8,000
1 Motor van 31 cwt.	... " 2,500
Cold storage plant and utensils ...	... " 10,000
Reserve for contingencies ...	... " 4,500
Total	... Rs. 50,000

The retail price of 4½ annas per seer can be reduced as the turnover increases and the model farm should be able in due course to bring down the retail price of milk in the City to previous price of 3 annas per seer. This should be the goal at which the model Farm should consistently aim.

I trust that some of our patriotic Graduates would start such a Farm and give it a fair trial to make it a success.

Besides this, there is another important subject namely the study of different internal and external parasities by our Graduates in some Laboratory. The study of Protozoa viz. unicellular microscopic animals alone would be a very interesting and instructive subject. These Protozoa have acquired the unenviable reputation of being the causal organisms of various diseases in men and animals. The investigations of Smith and Kilbourne on the parasite of Texas Fever of Cattle and its transmission by ticks, those of Laverson, Ross, etc., on malarial parasites of men and birds and their carriage by mosquitoes and the researches of Bruce who demonstrated the trypanosomic nature of the African Cattle disease—Nagana and its conveyance by flies, has opened a new field of inquiry which has led to a most extensive study of parasite Protozoa.

Away from the stimulus of the great research centres of the West and in the absence of adequate facilities and encouragement, an amount of work is still being carried on in India of which we may feel justly proud. A host of Medical and Veterinary men working in India have played a large and important part in the development of Medical and Veterinary Protozoology and we must contrive to study Protozoa wherever we may find them, whether in the soil, water or intestines, blood or other parts of the body of all kinds of animals. Discovery will be its own reward and every individual worker should gather some material for its completion.

Then again, the old method of treatment of Rinderpest by Serum, also is still continued with the result that it gives immunity for only a few days. I would therefore again urge upon Government the necessity of introducing the Serum-simultaneous method which would confer protection almost for life. This method of inoculation is one which must be carried out by Officers specially trained for the purpose. It is therefore the duty of the College authorities, the Civil Veterinary Department, to train some officers as soon as possible with a view to introduce this method.

At the All-India Veterinary Conference held in Bangalore last year some valuable suggestions were made with regard to the expansion of our Department with some of them viz :—(1) An absolute need for opening Research Institutions in all major Provinces, (2) Starting of Cattle Breeding Farms, (3) Conducting Experiments on the nutritional values of different kinds of fodder, (4) The role to be played by the Veterinarian with regard to Public Health, (5) The Legislation required to prevent the indiscriminate movement of diseased cattle from fair to fair, (6) The desirability of making India self contained in the matter of medicine and surgical appliance, (7) Systematic field investigation of disease, (8) An improved and uniform course of study in all Colleges, (9) Affiliation of the Colleges to the Universities, (10) Systematic propaganda work by motor exhibition vans equipped with a number of Lantern Slides and Charts sent round in all districts by turns, in charge of Asst. Vety. Surgeons. In this connection I am glad to bring to your notice a new scheme suggested at Poona lately.

I would also invite your urgent attention to the appeal made by the Editor of the Indian Veterinary Journal to extend to him greater co-operation in the matter of securing articles, clinical notes and other interesting matters for publication in the Journal, and also in enrolling all the members of the profession as subscribers, I feel that there is no necessity to say anything more than the Editor is doing his work at a great sacrifice for the uplift of the profession, and as such it is the duty of every member to do his bit of service to the only Journal in India and try to make it a monthly Journal.

You must have noticed that a few months ago certain changes in the organisation of Veterinary Services in the Bombay Presidency have been suggested in a Review of the Veterinary Service in the Bombay Presidency which has been published by the Government Central Press. It stated that the Service was at present supplied to the public by means of three entirely independent departments operating in the Presidency, excluding Sind and Bombay City and Fort; and there being no Officer responsible for Veterinary Services as a whole in the way that the Inspector General of Police is responsible for the Police and therefore it was a matter for consideration whether such united control would not be advisable. Apart from the undesirability of having 3 distinct Departments dealing with Veterinary work, the organisation of each of the Departments had defects which needed to be remedied. The principal ones were a shortage of staff and dispensaries and the need for investigation and research into animal diseases. It had been realised for sometime that the present staff was inadequate to meet the normal Veterinary needs of the Presidency. Hence the following suggestions were made in the Review:—

(1) The abolition of the posts of Superintendents C. V. D., in the Presidency and Sind, excluding Bombay City and Port and the creation of a Director who will administer Veterinary Services in the Presidency including Bombay City and Port and exercise broad control over technical policy in Sind and over the Bombay Veterinary College.
(2) The abolition of the 5 posts of Inspectors in the Presidency excluding Sind and of 2 posts of Inspectors in Sind and the substitution of 4 posts of Deputy Directors.
(3) The abolition of the post of Deputy Superintendent in the Bombay City and Harbour Department.
(4) An increase in the cadre temporarily during the period of reorganisation.
(5) The separation of Rajputana from Sind.
(6) The charges of the Deputy Directors to be similar to Revenue Divisions.
(7) A systematic increase in the number of Dispensaries.
(8) Gradual increase in the reserve strength of the number of Asst. Surgeons in charge of Dispensaries and Hospitals.
(9) The establishment of an up-to-date Laboratory for Research Work at the Bombay Veterinary College.
(10) The introduction of small charges for treatment at Hospitals and Dispensaries.

(11) Legislation to enable the Department to deal with contagious diseases.
(12) Payment by the Government of India for the work done for them under the Live-stock importation Act.
(13) Further investigation of the question of transfer of the Live-stock Expert to the Veterinary Department.
(14) Affiliation of the Veterinary College to the Bombay University.

The above Review was prepared with Government's intention to examine the whole administrative machinery of the Presidency in order to ensure that it was meeting present requirements.

As views and suggestions were invited from bodies who were in a position to examine the matter contained in this Review, the Managing Committee of our Association, which is the representative body of the Veterinary profession in the Presidency went carefully through this Review and submitted their views and suggestions to the Government in the interest of the Veterinary Graduates and the public.

In para 1 of the Review Government laid down that changes to be introduced for the efficient working of the administrative machinery should not involve any additional burden on the finances of the Presidency. In view of this suggestion, it was very difficult to suggest such changes as were most likely to be financially beneficial for the future needs of the service as a whole. But taking it for granted that the changes proposed did not entail any additional expenditure the Managing Committee examined these recommendations and made the following suggestions:—

(1) The proposal for the creation of a Director was supported on the grounds that there should be an administrative head in each province and as already, Directors' posts existed in all provinces except Bombay.

(2) It was undesirable to entertain the Services of Army Veterinary Officers once again to the C.V.D., to fill up the posts of 3 or 4 Deputy Directors. Any Army Officer however vast his experience may be was not likely to be in a position to understand the rural population with whom he will have to deal with their language and their Veterinary needs still less from one freshly recruited from outside India. Moreover their experience of cattle diseases in India would be very limited. Apart from this, Indian Graduates have been found quite efficient to hold responsible posts in almost all the Provinces. Besides this, the creation of 4 Deputy Directors' posts and filling them up by Army Officers would involve additional expenditure. The Association therefore suggested a creation of 3 Deputy Directors, one for Sind and 2 for 2 circles in the Presidency with 8 posts instead of 7 of District Officers 2 under the Deputy

Director of Sind and 3 each under the 2 Circle Officers in the Presidency proper. These proposals were on a line with the recommendations of the Royal Commission on Agriculture. As funds became available the scheme may be expanded in future so as to have one Officer for each district and 1 Deputy Director for each province. Attempts should be made to find out funds to increase the standard of Veterinary Education by establishing an up-to-date Laboratory by affording facilities for Research as could be undertaken at the College.

(4) The question of affiliation of the Bombay Veterinary College to the Bombay University should be shelved so long as the financial condition did not improve.

It is a matter of gratification to note that at the meeting of the Governing Body of the Imperial Research Council held in May last it was resolved to appoint a Special Officer for the investigation of Tuberculosis and similar diseases among animals. A scheme was worked out under which 2 or 3 Indians with suitable basic qualifications would be sent out for training abroad. From these a selection would be made of 1 or 2 who as a result of their training were considered most suitable for employment as Veterinary Research Officers. The Governing Body also sanctioned the appointment of Veterinary Research Officers in all the Provinces at a cost of 6 lakhs spread over 5 years. It was also approved that a Protozoologist be appointed at the Imperial Institute of Veterinary Research at Muktesar and that if possible an Indian should be selected.

Before concluding I should like to extend my thanks to all of you for your presence and co-operation in making this annual function successful. Some of you have taken the trouble to come from distant parts and have taken up the burden and inconvenience of the journey. We greatly appreciate the sacrifice on your part and thank you for the same. When you go back to your different districts I hope you willl broadcast the message that the Association is doing its best. I would also wish to express my sincere thanks to the members of the Managing Committee for all that they have done to further the work of the Association especially Mr. Date the local Joint Secretary and Mr. Marathe the Treasurer who have carried out the duties of their Office so admirably with untiring zeal.

I hope that when we meet next year we shall have still more useful progress to record. Sometimes, it had been suggested that this Association does not serve any useful purpose. In this, I do not agree. This Association to-day offers some evidence of the benefits of the Association of some sort. An Association does not necessarily guarantee to solve all the difficulties—but it does bring the members of the profession together in a way that they feel that they have a common understanding for a common cause and good will.

With these few remarks, it is my pleasant duty to move that the Managing Committee's report and statement of accounts for the year ending 31st December 1930 be adopted.

THE SIND CIVIL VETERINARY DEPARTMENT SUBORDINATE SERVICE ASSOCIATION.

Proceedings of the First Conference held at Jacobabad on 31st January 1932.

Members present :—

Messrs :—Abdul Majid N. Siddiqi.
S. A. Gulrajani.
A. G. Kaka.
W. K. Abbasi.
F. K. Solangi.
H. P. Abbasi.
B. A. Mankad.
K. U. Ramachandani.
A. C. Shivanani.

Proceedings of the Conference were opened by J. H. G. Jerrom, Esq., M.R.C.V.S., I.V.S., Superintendent, Civil Veterinary Department, Sind and Rajputana, at the Wadia Veterinary Dispensary, Jacobabad, at 10 A.M., and the following professional demonstrations were conducted :—

1. Castrations by Burdizzo Method.
2. Passing of stomach tube in horses.
3. Intravenous and intratracheal injections.
4. Exhibition of anatomical charts of horse, ox and dog.
5. Examination of stained and unstained smears of blood pus, etc., under microscope.

Views were exchanged and discussions carried on professional matters by the members.

The following professional papers were read and discussed :—

1. "A Case of Purpura Hæmorrhagica in Horse"—By Mr. W. K. Abbasi, G.B.V.C.
2. "Traumatic Pericarditis in Bullocks"—By Mr. A. G. Kaka, G.P.V.C.
3. "Actinomycosis in Bullock and Horse"—By Mr. A. G. Kaka, G.P.V.C.
4. "An outbreak of Verminous Bronchitis in sheep"—By H. P. Abbasi, G.B.V.C.
5. "Rupture of Duodenum in Horse"—By Mr. Abdul Majid Siddiqi, G.P.V.C.
6. "Strychnine Poisoning in dogs"—By Mr. Abdul Majid Siddiqi, G.P.V.C.

The First Conference of the Sind Subordinate C.V.D. Service Association

held at Jacobobad on 31st January 1932.

From Left, Sitting:—Mr. A. G. Kaka, Mr. Abdul Majid, Mrs Jerrom, Mr. J. H. G. Jerrom, M.R.C.V.S., I.V.S.. Mr. Keshavadas *(Head Clerk)* Mr. B. A. Monkad.

Standing from No. 3rd:—Mr. T. K. Solangi, Mr. H. P. Abbasi, Mr. S. A. Gulrajani, Mr. W. K. Abbasi, Mr. A C. Shirnavi, Mr. K. U. Ramchandani.

The Conference then adjourned at 2 P.M., for lunch given by Mr. W. K. Abbasi, Veterinary Assistant Surgeon, Jacobabad, and re-assembled at 4 P.M., at the beautiful lawn of Wadia Veterinary Dispensary, Jacobabad.

Welcome address was read Mr. Abdul Majid N. Siddiqi, Vice-President of the Association, who then requested Mr. J. H. G. Jerron, M.R.C.V.S., I.V.S., to occupy the presidential chair.

Mr. S. A. Gulrajani, Honorary Secretary of the Association read his Annual Report on the working of the Association which was unanimously adopted.

Letters and telegrams expressing inability to attend, but wishing success for the Conference were read from the following gentlemen :—

Messrs. C. S. G. Haji, G.B.V.C., (President) M. W. Mirza, P. P. Badlani, K. M. Sulleiman, J. R. Banna, G. D. Waknis, A. D. Lilaramani, and A. I. Ukely.

After this the following resolutions were put before the Conference.

1. *This Association places on record its sense of appreciation and gratitude to the Government of Bombay, the Commissioner in Sind, and the Superintendent, C.V.D., Sind and Rajputana, for kindly recognising the Association.*

Proposed by Mr. Abdul Majid and seconded by Mr. A. G. Kaka, and carried unanimously.

2. *This Association requests the Superintendent, C.V.D., to kindly arrange to notify the posting and transfers of the establishment of the Subordinate Civil Veterinary Department, Sind, in the Sind Official Gazette as previously done.*

Proposed by Mr. W. K. Abbasi and seconded by Mr. A. C. Shivnani, and carried unanimously.

3. *This Association requests that the Government be moved through the Superintendent, C.V.D., to consider the urgent necessity of creating at least 2 posts in the Subordinate C.V.D., Sind—one Veterinary Inspector and one Veterinary Assistant Surgeon, to do solely propaganda work amongst cattle owners to educate them in matters Veterinary, in the same way as the Agricultural and Co-operative Departments are doing.*

Proposed by Mr. Abdul Majid and seconded by Mr. A. G. Kaka, and carried unanimously.

4. *In view of the fact that the casual leave with permision to avail of holidays is now granted to the establishments in accordance with the order of the Commissioner in Sind, issued to all the Departments, this Association requests the Superintendent, C.V.D.,*

Sind and Rajputana that leave for 7 days in addition to other holidays, sanctioned by the Commissioner in Sind be granted as is done in the case of employees of other departments.

Proposed by Mr. K. U. Ramachandani and seconded by Mr. B. A. Mankad, and carried unanimously.

5. Proposed by Mr. Abdul Majid and seconded by Mr. Mankad that Mr. C. S. G. Haji be elected as President of the Association for the current year.

   Carried unanimously.

6. Proposed by Mr. A. G. Kaka and seconded by Mr. A. C. Shivnani that Mr. Abdul Majid be elected as Vice-President of the Association for the current year.

7. Proposed by Mr. H. P. Abbasi and seconded by Mr. A. G. Kaka that Mr. S. A. Gulrajani be elected as Secretary and Treasurer of the Association for the current year and Mr. A. C. Shivnani as Auditor.

   Also that Messrs. Badlani, Ukeley H. P. Abbasi and M. A. Ansari be appointed members of the Managing Committee for the current year.

   Carried unanimously.

The President then addressed the Conference which terminated at 5-30 P.M., after a hearty vote of thanks to the Chair.

The members of the Conference were entertained to a 'Tea-party' very kindly given by Mrs. Jerrom on a lavish scale and a group photo of those present was taken.

THE SIND CIVIL VETERINARY DEPARTMENT SUBORDINATE SERVICE ASSOCIATION.

WELCOME ADDRESS.

BY

MR. ABDUL MAJID N. SIDDIQI, G.P.V.C., *Vice-President.*

Mr. President and Professional Brothers,

In the capacity of the Vice-President of the Sind Civil Veterinary Department Subordinate Service Association, I esteem it a great privilege and honour to welcome you all most cordially to this historic city of Late General John Jacob (Jacobabad). This Conference is unique and first of its kind in the annals of the C.V.D., Sind. I trust that with the guidance of our worthy President and with the help and co-operation of our members, we will be able to derive some real benefit from our discussions and deliberations.

May I remind you, Gentlemen, that it is solely due to the kindness of our Superintendent Mr. J.H.G. Jerrom, M.R.C.V.S., I.V.S., and Khan Sahib J.D. Buxy G.B.V.C., that the Commissioner in Sind was pleased to get this Association recognised by the Government of Bombay, and we must therefore express our sense of deep gratitude to these high authorities.

Now I would let you know, Gentlemen, that when I approached the Superintendent, C.V.D., Sind and Rajputana with a request to preside over the 1st Conference of the Association, he graciously consented to do so. You are perfectly aware of the fact that our able, kind and sympathetic Superintendent has been holding the reins of this Office for nearly twelve years. During this period he has always acted as a noble guide to us all and his Presidentship to-day will undoubtedly be felt as a good omen towards the materialisation of all hopes and plans of to-day in the days to come.

Gentlemen, I have also to thank you for covering the long distances of your respective journeys, in these days of financial stringency, and sincerely wish that on your return you will carry the pleasant and happy memories of your visit to your absentee brothers. We have assembled here to-day firstly to read and discuss articles on professional subjects for furtherance and development of our knowledge and secondly to consider some proposals for the betterment and needs of our service and the C.V.D., and lastly to promote social intercourse among our members.

The Province of Sind is now composed of 8 districts, divided into 61 talukas. There are 18 Veterinary Dispensaries in Sind, which means one Veterinary Dispensary for nearly 3.38 talukas; whereas in Bombay Presidency proper there are 105 Veterinary Dispensaries in 173 talukas. That is to say one Dispensary for 1.63 talukas. This means that the Presidency has double the number of Veterinary Dispensaries than Sind for the same area. The strength of Veterinary Assistant Surgeons and Inspectors in Bombay Presidency proper at present is 123 and 5 respectively, while in Sind there are 21 Veterinary Assistant Surgeons and 2 Veterinary Inspectors. These figures clearly show that Sind C.V.D., has not received its share. From the year 1924 to 1926, only two new Dispensaries were opened in Sind and none during the last 5 years, although the Superintendent, C.V.D.. Sind and Rajputana has been pressing the necessity for opening new Dispensaries from year to year, It is indeed a great pity that Sind being entirely an agricultural Province should possess such an inadequate Veterinary Aid.

The new and bright era of agricultural development and irrigation of waste lands on account of construction of 7 canals from the mighty river Indus has commenced now and the question of Cattle Supply and Improvement has already received the special attention of the Government. It will not be out of place therefore to quote here paras 22 and 23 of the report of Cattle Supply and Improvement Committee published recently as under :—

Expansion of Veterinary Department.

22. "We have found a very general recognition of the value of the services rendered by the Veterinary Department and a general desire for the expansion of its activities. The Department at present consists of one Superintendent (who is also in charge of Rajputana)' two Inspectors and there are 18 men in charge of Dispensaries with 3 men in reserve. We think that as finance permits the Department should be expanded until there is at least one Dispensary in the head-quarters of every taluka, and we understand that the Superintendent has already submitted proposals to Government on these lines. At present an attempt to expand the area which each Dispensary serves is made by provising that the Veterinary Assistants should tour for about a week in each month, but this arrangement is not satisfactory because of the interference it involves with the work at head-quarters, and it has also broken down because of the inadequacy of the touring grants provided. With a Dispensary in each taluka, we think there would be no need for itinerary assistants, but until that ideal can be brought about, we think that it would be better to supplement the existing Dispensaries by a separate staff of itinerant assistant rather than to require the head-quarter Dispensary staff to tour for expanded periods.

We do not think the present system of dual control of the department is satisfactory. Government gives a grant to each Dispensary and the Local Boards provide sums at least equal to the Government grant. There is evidence that the majority of Boards are anixous to increase the number of Veterinary Dispensaries and would be willing to provide their share of the funds, but the necessary Government Grants are not forthcoming. The Veterinary Assistant is, in practice, largely under the orders of the President of the District Local Board whose wishes the Superintendent has as far as possible, to meet in the matters of transfer and discipline. We think it would lead to an increase if efficiency and exaction of higher standard of work of the services were entirely paid for and controlled by Government, and we suggest that the question of abolishing the present dual control be considered."

23. 'There is considerable complaint that outbreaks of contagious diseases are not reported to the Veterinary Department with sufficient promptitude. At present, the reporting of outbreaks is the duty of the subordinate revenue establishment, we think it should be recognised as part of the duty of all subordinate district establishments to report such diseases whenever they hear of them, and that the establishments of Local Boards should also be asked to co-operate.

It is earnestly hoped that Government will kindly consider the above recommendation at an early date and translate them into action at an early stage."

In spite of adverse climate, difficulties of communications, long and tedious journeys, the present insufficient and inadequate staff and various other hardships, we have been doing our duty to the best of our energy and capacity, to alleviate the sufferings of dumb creatures and thereby adding to the economical relief of live stock owners. But much remains to be done yet. The agriculturist of Sind surpasses in his ignorance and lethargy in comparison to his brother in other Provinces in India, and the greatest need of the time is the propaganda to educate him on Veterinary matters by lecturing on diseases of animals, demonstrations of surgical operations and devices, distribution of pamphlets and leaflets and organisation of small fairs and shows by means of magic lantern and cinema films.

We have to keep ourselves in touch with the up-to-date professional publications and periodicals to keep our knowledge up-to-date and transform that knowledge into practice and thereby discharge our duty towards the Lord of the Universe, Crown and Country.

Gentlmen, one thing more and I have finished. You know that the recent publication of the review of the Civil Veterinary Department in April 1931, clearly shows the contemplation on the part of Government of Bombay to introduce considerable radical changes in this Department. Let us all pray and hope that Sind will be given its due share in the higher grade of services in this newly transferred Department.

In conclusion, I suppose, I am not wrong in anticipating your consent with regard to my request to our noble and worthy Superintendent to occupy the Presidential Chair.

THE SIND CIVIL VETERINARY DEPARTMENT SUBORDINATE SERVICE ASSOCIATION.

PRESIDENTIAL ADDRESS.

By

J. H. G. JERROM ESQ., M.R.C.V.S., I.V.S.,

Superintendent, C. V. D., Sind and Rajputana, at the first Conference,

Held at Jacobabad on 31st January 1932.

MR. ABDUL MAJID AND GENTLEMEN,

I thank you for the honour you have done me in electing me as President of this Conference. It has given me great pleasure to be present here to-day at the First Conference of the Sind Civil Veterinary Department Subordinate Service Association.

I regret that your President, Mr. Haji was unable to attend as he had a good deal to do with starting the Association. Also most of the members from Lower Sind are engaged in outbreak duty and were not able to come.

I am sure, however, that you will agree that, in spite of the difficulties, the meeting to-day has been a success. We have had several instructive demonstrations and have heard some interesting papers.

Mr. Abdul Majid has made a very able speech, in which he has mentioned several subjects of interest to our Department, and I fully agree with most of his remarks.

Your Association is a small one but you have keen and hard-working Officers and if you all stick together, there is no reason why you should not make it a success.

I will not detain you further but will conclude by wishing your Association every success and to assure you of my help and support.

REPORT OF THE SECRETARY OF THE SIND CIVIL VETERINARY DEPARTMENT SUBORDINATE SERVICE ASSOCIATION

for the period ending 31st December 1931.

Mr. President, Mrs. Jerrom and Professional Brothers,

A move for the formation of such an Association was first made by late Khan Bahadur Haji, the Deputy Superintendent, C.V.D., Sind in 1915, but it did not materialise in his life time. Then too from time to time efforts were being made by various Veterinary Assistant Surgeons for the same till a proposal for the formation of Joint Service Association of Bombay Presidency and Sind was made. But when the Presidency people declined to have us in their Association on the ground that Sind had a separate Civil Veterinary Department, a move was made for organising this Association.

For this purpose, two preliminary meetings were held at Hyderabad, Sind, one in December 1929, and the other in April 1930. In the latter, the Association was inaugerated, rules were passed and the following office-bearers elected :—

Mr. C. S. C. Haji ... *President.*
,, Abdul Majid ... *Vice-President.*
,, S. A. Gulrajani ... *Secretary & Honorary Treasurer*
,, G. D. Waknis
,, M. W. Mirza ... *Members of the Managing Committee.*
,, J. A. Idnahi
,, J. R. Banna ... *Treasurer.*

In accordance with a resolution passed in the same meeting the Government were moved to accord official recognition to it which was granted in their Resolution No. 8743 dated 31-3-31.

I think, I need not lay stress on the fact that this is the only organisation through which we can look after the interests of the Department professionally and otherwise.

Up till now nothing substantial has been done through the Association to place on record and only a beginning has been made.

By the end of March 1931, there were 21 members out of 22 of Subordinate Service officers in the Department.

After this Mr. Idnahi ceased to be a member on account of leaving the Department and two young graduates who were newly appointed in the Department have joined making the strength of 22 out of 23 at present.

I may state that inspite of so many members on the roll most of them are keeping aloof from taking sufficient interest in the working of the Association and let me believe that a generous response will come at the Association's next gathering.

The total receipts and expenditure for the period are Rs. 98/ and Rs. 27-7-10 respectively, leaving a balance of Rs. 70-8-2, out of which Rs. 50/- are in Savings Bank Account and the rest with the Secretary.

It is a matter of regret to note that a lot of arrears on account of the current and previous year's contributions remains unpaid but hope that by the close of the year all dues will be paid.

In conclusion, I think, the members will associate with me in thanking Mr. K. H. Vorah for doing honorary clerical work of the Association from time to tim

S. A. GULRAJANI,
Honorary Secretary & Treasurer.

U. P. VETERINARY ASSOCIATION.

WELCOME ADDRESS.

By

M. MOHD, TAHIR MIRZA, G.P.V.C.,

Chairman, Reception Committee, at the twelfth Session of the U. P. Veterinary Conference.

Held at Lucknow, on 27th February 1932.

Before reading my address I wish to inform you, gentlemen, that our popular member of the Association, Khan Sahib M. Moin Khan, the late Deputy Superintendent, was elected Chairman of the Reception Committee, but to our great misfortune he has been attacked by malaria and confined to bed and we are deprived of his valuable guidance and advice. So the responsibility of welcoming you was thrown on my shoulders only last night. The time at my disposal was very short. However, I will do my best to arrange for your comforts as far as possible.

Gentlemen, I thank you all for joining us in this Conference after travelling long distances passing sleepless night or an idle day. Thank God, we are alive to hold the 12th Session of the United Provinces Veterinary Conference in Lucknow again, whereas some of our professional brothers being tired of the drudgery they had to experience during the performance of their active duties, forsook us for ever last year. Be it a cold or hot place, the severity of the season is unbearable for a worker. I saw myself several men in Jhansi dying suddenly from sunstroke in the hot season, while our professional brothren at the same time were conducting their assiduous work of inoculation in open fields under the blazing sun. I wonder if such men would prove to be death-proof for long.

Gentlemen, we have gathered together here from no selfish motive; our aim is to sharpen our abilities by discussing professional subjects and thus enabling ourselves to be more serviceable to the country. We must have recess after long laborious work, so this gathering of ours is a sort of recess after our full working year. There is no selfishness in asking for due enhancement in our pay, it is simply watering a tree for bearing more fruit, and thanks to the Government that it has promised to do the needful. The Retrenchment Committee has wisely proposed to amalgamate the Cattle Breeding Department with the Civil Veterinary Department thus opening a vast field for activities and which we are ready to welcome. This prudent act of the Committee deserves praise from the Government and the country alike.

Gentlemen, this session, the reception work seems to be two-fold, that is, reception at the railway stations and at the lodgings where the guests were to put up. Sirdar Udey Singh Siddhu and M. Abdul Wahab Hameed received the guests at the Station while Khan Bahadur Sheikh Niaz Mohammad had all the arrangements done at the lodging for the reception, so we are thankful to them for their zeal and love. More so, we are deeply grateful to our revered worthy Parton, Captain S. G. M. Hickey who has ever been taking keen interest in our Association and stimulating us by publishing an appeal in the Veterinary Magazine, and to-day, Gentlemen he is going to open the Conference and take part in its deliberations.

Gentlemen, this Society of ours would be without life were there not such a noble figure as Khan Bahadur Sheikh Niaz Mohammad who had to do hard work to put the several pieces in proper order to enable the machine of our Society to work smoothly and we pay our best thanks to him for his unremitting exertions. We are fortunate in having amongst us in this Conference our old worthy life Joint Secretary, Sayed Mohammed Raza Hussain who has previously worked as Editor and Secretary of this Association with incredible ability and interest and we are deeply indebted to him for joining us here in our deliberations.

Gentlemen, on behalf of the Reception Committee, I apologise for any short-comings in your reception and comforts. In the end, Gentlemen, I thank you again for taking so much trouble in travelling long distances to join the Conference and pray to God that He may grant you all success in your deliberations.

U. P. VETERINARY ASSOCIATION.

Patron's Opening Speech

On the Occasion of the 12th U. P. Veterinary Conference, held at Lucknow, on 27th February 1932.

Mr. Secretary and Members of the United Provinces Veterinary Association,

I thank you for welcoming me to the 12th Session of your Conference to open it and to hear a word of advice from me. I should first like to tell you what particular work outside the general routine was done since we last met.

Special endeavours were made during 1931, for suppression of cattle diseases in the interior of Almora District for which the Deputy Superintendent and Circle Veterinary Inspector had to camp out for a prolonged period.

The appointment of a Veterinary Inspector on special duty has enabled this department to pay attention to investigation work in the field, as a result of which investigations were carried out on Liver-fluke disease, for which a special treatment by "Danistol" (kindly supplied by Muktesar) has been undertaken.

Testing and diagnosis of Tuberculosis and Johne's disease cases were made at the Allahabad Agricultural Institute with satisfactory results.

Rejuvenation by Gland grafting experiment of a stallion has been carried out and the result is awaited.

Certain investigations have been made among sheep in Balrampur (District Gonda) where a heavy mortality was caused by " Hydatid Cysts ".

Extra Veterinary aid was afforded to the Garhwal District by deputing head-quarters staff twice during the year for months together and althogh the full quantity of serum demanded by the Board could not be supplied for limitation of funds the total amount of supplies is 1,03,500 doses, costing Rs. 19,406.

"Serum-alone" method has been sufficiently popular through the untiring efforts of the staff and attention is now drawn towards Serum-simultaneous operations which should gradually be introduced as it gives longer immunity to the inoculated.

Figures under castration of undesirable bulls are far more satisfactory than before and any progress made in this direction will be appreciated.

I would now turn to the emergency cut of ten percent on salaries and would only say that it has certainly affected the staff as in every other department, but the question of revision of pay is receiving the attention of Government and their decision on the matter should be patiently awaited.

I would take this opportunity to impress on you that co-operation and faithful support of Government is essential for every Government servant and it is expected that every member will respond to this with all sincerity.

I shall be glad to see that there is no lack of fellow-feeling amongst the members and this should further improve the working of your Association.

With these words, Gentlemen, I declare the Conference open.

U. P. VETERINARY ASSOCIATION.

PRESIDENTIAL ADDRESS

BY

KHAN BAHADUR SHEIKH NIAZ MOHAMMAD, G.P.V.C., SUPDT.
C. V. D., U. P.,

At the Twelfth Session of the U. P. Veterinary Conference held at Lucknow, on 27th Febrnary 1932.

Mr. PATRON AND GENTLEMEN,

Let me first thank you very sincerely for the honour you have done me by electing me again as your President. I accord hearty welcome to you all for joining us.

Just as the country groans under the weight of tumults of the present day, our Society also is not immune from those effects. Stringency of the finance, apathy of its members, clogs in the way of its office-bearers and lastly the pressure of official work on my own shoulders are discouraging enough for the well-being of any Society. Nevertheless this Society of ours, it is gratifying to note, has not yielded to any change that may forebode bad luck to the success of the Society. And the whole credit, on this score, is due to the workers particularly.

Our financial difficulties, mention of which was made in my address last year, unfortunately still remain the same. This accounts for the fact that we could not succeed to our heart's desire in the improvements pertaining to the publication and other matters of the popular Magazine of our Society.

The general indifference of the members has resulted in this that it could not get such contributions as enhance the value of such Magazines. The poor editor selecting the articles received from quite different sources, tried not only in making the Magazine an interesting reading but any how had to find his way to issue the same in time. In my opinion, I think it advisable if the Subject Committee is approached on the matter. The committee then should frame a permanent policy to bind the editors. I learn that most of the members suffer under a sort of misunderstanding on the above account. I am afraid that in its onward career this sort of misunderstanding might not be responsible for killing the very object of the society for which it stands, I mean co-operation and comradery among the Association. I have every hope that you will please settle the difference before the Conference closes.

You are quite aware of the financial difficulties of the country, yet, on behalf of your Society it was urged that the Government may condescend to exempt the ten per cent. emergency cut from the salaries of the members of this department, in view of the fact that the members of other similar departments draw larger pay. But unfortunately we have failed as the Retrenchment was sweepingly general. I hope you will not lose heart and in these hard times you will try to discharge your duties with sincere zeal, steadfast loyalty and earnestness.

It is cheering to note that the United Provinces Retrenchment Committee after very sympathetically considering the conditions of the Province has been pleased to recommend to amalgamate the Cattle Breeding Section with the Civil Veterinary Department. This proves that the rightful claimant is given his due rights. Indeed, it is a fact that for carrying out Cattle Breeding Operations in India the Veterinarian is the only fit and qualified person. His constant touch with the agriculturist, his practical help in the troubles and ailments of the dumb animals, his valued suggestions on the health and strength of the cattle, his fostering care towards upkeep, etc., of live-stock, his scrutiny of the facts that stunt milk-growth and check vigour and vitality for labour, and above all his scientific rectification thereof are things that want, and badly want, a Veterinarian only to guide to a right path and advise salutary counsel thereon, so that the true progress and improvement of the cattle in the country be secured.

The improvement shown by the Punjab Civil Veterinary Department on the Cattle Breeding Operations in the famous district of Haryna (Hissar) which I have the honour to call my home, needs little mention. In India, it is in the Province of Punjab alone that the Cattle Breeding Operations are improving in their true sense. We are proud of the improvement there. If other Provinces had followed in her foot-steps they would have, like the Punjab, also worn feather in the cap. And in these Provinces too we would have seen cattle-wealth on improved lines. Let us pray for fulfilment of the homely adage—"Better late than never." The United Provinces Retrenchment Committee has very prudently felt the need and consequently has rightly recommended for the amalgamation of the Cattle-Breeding Section with the Civil Veterinary Department. Taking it in its economic and scientific aspect it would be killing two birds with a stone. We hope that in view of the august recommendations the Government would be pleased to confer a great boon to the agricultural class.

It would highly please you to hear that the Head of your Department, the Director, has not only extended his sympathy to your Society but is particularly keenly interested in the welfare of the Magazine for which on behalf of the Society I tender my heartful thanks. I pray that under his aegis the Society and the Magazine would flourish for long. Amen.

College News.

BIHAR AND ORISSA VETERINARY COLLEGE, PATNA.

The following students are declared to have passed the Annual Examinations for the session 1931-32, held in March and April, 1932:—

Class 'C'.

1. Q. Huda.
2. A. Jamil.
3. K. P. Chatterji.
4. R. C. S. C. Prasad.
5. M. Y. Khan.
6. C. M. Mahanti.
7. K. M. Sahu.
8. R. A. Prasad.

Class 'B'.

1. M. M. A. Rahman.
2. T. B. Singh.
3. V. R. Narsaya.
4. M. A. Khyum.
5. M. A. Rahman.
6. N. N. Kukshal.
7. M. A. Z. Khan.
8. S. B. Hussain.
9. L. D. Panda.
10. K. Hussain.
11. S. H. Qureshi.
12. D. Kohoro.
13. M. A. Khan.
14. J. Topno.
15. A. Mundu.

Class 'A'.

1. Haridwar Singh.
2. P. Toppo.
3. S. S. Hussain.
4. R. N. Arasad.
5. S. M. Moosa.
6. B. N. Singh.
7. B. B. Bhole.
8. Badrur Rahman.
9. K. N. Srivasatab.
10. A. K. Singh.
11. R. N. Sarkar.
12. R. R. Soren.
13. S. D. Rai Sharma.
14. Ram Deni Prasad.

R. T. DAVIS, I.V.S.,
Principal,
B. & O. Veterinary College.

BOMBAY VETERINARY COLLEGE.

The following candidates have been declared successful at the Professional Examinations held in April 1932, in the order of merit.

No.	Third Professional.	Second Professional.	First Professional.
1	Iyengar N. G.	Pillay M. K. P.	Aiyer R. S.
2	Iyer A. R.	Ghose S. C.	Natesan A. A.
3	Jan A. A.	Murthy K. S.	Iah H. C.
4	Nair G. B.	Seshadri N.	Desai J. M.
5	Venkatachar K. T.	Singh S. S.	Narayan Rao C. R.
6	Kharate V. B.	Abasi A. M.	Iyengar B. R. A.
7	Digrajkar L. D.	Wallabdass P. R.	Behere B. G.
8	Bargah G. S.	Swamy B. N.	Patel N. M.
9	Khan M. U.	Abdul Rashid	Daulat Sinha
10	Raj Gopalan M. K.	Noor Ahmed	Naidu T. C.
11	Verma A. K.	Verma J. P.	Iyengar N. L. N.
12	Riyasat Ali	Prasad S.	Kolte N. S.
13	Haripuray S. L.	Deshpande B. C.	Vyas C. G.
14	Pataskar K. G.	Kulkarni N. G.	Urs G. K.
15	Sawhney T. R.	Sayeed M. A.	Jagannath Sinha
16	Khan M. I.	Abhyankar R. K.	Chitrav D. K.
17	Chandorkar G. S.	Kurkure M. T.	...
18	Verma B. L.	Lawrence E. G.	......
19	Wane G. P.	Mutrajloo N.	......
20	Manohar Lal	Iyengar S. N. V.	......
21	Srinath K. N.	Pathak P. R.	......
22	Chauhan G. R.	Bhonsle M. G.	......
23	......	Revandkar V. G.	......
24	......	Schar M. D.	......
25	......	Bhonsale S. S.	......
26	......	Choubey S. L.	......
27	......	Ramachandra Rao	......
28	......	Sapre S. N.	......
29	......	Deshmukh K. V.	......
30	......	Shanane G. B.	......

V. R. PHADKE,

Principal, Bombay Veterinary College.

Appeal.

THE ALL-INDIA VETERINARY ASSOCIATION.

An appeal to the members of the Veterinary profession in India.

I regret very much to mention that, so far, no Province or State has come forward with an invitation to the All-India Veterinary Association to hold the next Session of the Conference. The Bihar and Orissa Veterinary Association which extended an invitation by wire at the conclusion of the Session of the Seventh All-India Veterinary Conference at Bangalore, withdrew for obvious reasons the invitation, nearly a year ago. This fact was announced in these columns last year.

At the time of the withdrawal of the invitation it was fondly hoped that the disabilities which compelled this regrettable step were only of a temporary nature, and that Patna would be able to renew the hearty invitation to hold the Sessions in its magnificient new College Buildings, at least during the last Easter. But so far, there is no sign of its doing it even for the ensuing X'mas there. Appeals to some individual members in the influential quarters in some of the Provinces and States have been of no avail so far. It was thought that the largest Indian State of Hyderabad (Deccan) would follow the good example of the Premier State of Mysore which successfully held a most splendid and useful Session of the Seventh All-India Veterinary Conference in December 1930. But there is no response from our friends even from that State.

No doubt, the economic depression and the consequent financial stringency are being felt in every walk of life but still the great sister profession of Medicine did not fail to hold the All-India Medical Conference even under these depressing conditions. It held a splendid Session in last March in Calcutta under the distinguished presidency of Sir Nilratan Sircar. Other professions and organisations have also met in their annual gatherings even in these depressed times. The necessity for the members of the Veterinary profession in India to meet on an All-India Platform is much greater to day than in the past. The Indian Veterinary profession can express its views and opinion only at such gatherings, on important matters which are engaging and should engage the attention of the Imperial Council of Agricultural Research in India and the provincial departments. At present, they are not having the benefit of the views of the bulk of the profession who are in close and actual touch with the country and her Veterinary needs. To this extent we are all sinners against these Bodies of the profession which have been working under great disabilities, as we are not doing our duty by them in this respect. No doubt, that most of us are doing quite loyal and good work but almost all this work is done as we are paid for it. There is a good deal of honorary work to be done individually and collectively and this is possible if we meet together at least annually. It is therefore a great reproach on the members esspecially leading members of the profession that no serious and successful attempts are made to meet regularly at annual gatherings on a common platform in this country. Some of the Provinces, especially Madras, which was a pioneer in these matters have failed even to arrange annual provincial gatherings. To-day the profession has got greater members on its rolls and also a larger number of them are holding financially and officially more important and influential positions than a decade ago, when these provincial and All-India Organisations and Conferences came into existence in the country. As already stated the necessity for these functions is much greater to day and many of the members who took the leading part in organising these are fortunately in our midst in the active practice of the profession. Under these circumstances one fails to understand the causes which have lead to this *impasse*.

May I once again appeal to all memebers of the profession in the country to wake up to a sense of duty towards this young profession? There is still enough of time from now to X'mas week in December this year for any Province or State to come forward with an invitation to the All-India Veterinary Association to hold the Eighth Session of the Conference in the above week. I hope, Patna will now find it possible to renew the invitation. But invitation from any Province or State is most welcome.

Anantapur P.O.,
(MADRAS).
1—7—1932.

M. S. SASTRY, G.B.V.C.,
Secretary, All-India Veterinary Association.

Correspondence

V. R. PHADKE,

Principal, Bombay Veterinary College.

TO

THE EDITOR,

Indian Veterinary Journal.

SIR,

Hearty congratulations to the new Principal of the Bombay Veterinary College. The expected has happened. On retirement of Mr. K. Hewlett, the late Principal, the subject of this sketch has been appointed as the permanent Principal of the Bombay Veterinary College from 1st of April 1932. Mr. Phadke is the first Indian to be appointed as the permanent head of any Veterinary College in India. This appointment heralds the recognition by the Bombay Government of the worth of Indians for such responsible posts. Students of Veterinary Science can take a leaf out of the active life of Mr. Phadke.

Mr. Phadke was born of poor but honest parents on 21-10-1882, at Donavali, a village in Chiplun Taluka, in Ratnagiri District; nurtured under the careful guidance of his parents, his father being himself a teacher of a Marathi School, he was always amongst the first few and passed his Matriculation in 1900, in Akola in Berar. He joined the Bombay Veterinary College in February 1901, as a Government scholar and graduated with distinction in December 1903,—being first in Class 'B' and second in Class 'C'. He was appointed as Assistant Veterinary Officer at the Bombay Veterinary College in 1904, and was appointed as Veterinary Inspector at Muktesar in May 1904. He was transferred to the Bombay Veterinary College in February 1908, as Curator and Bacteriological Assistant and was made a Lecturer in January 1912. In September of the same year, he was deputed by Local Government for Post-graduate study to the United Kingdom. Wherever he went, he won laurels and was held in high esteem by the Professors under whom he worked. His love of Science and devotion to duty coupled with sociable qualities endear him to all. He went through the D.V.H. Course in Liverpool and also underwent Post-graduate training at the London School of Tropical Medicine and at the Royal Veterinary College, Camden Town. He returned to Bombay in 1914. When War broke out in 1914 and there was a call for War service, he was the first to volunteer his services from the College and went to Marseilles with Remounts. In 1916, he was posted to fill an important appointment at the Muktesar Institute. He had to visit the Government Military Dairy Farms in India in connection with the Serum Simultaneous method against Rinderpest. His ceaseless work and devotion to duty earned for him the unanimous appreciation of those with whom he came in contact. He was the first Indian who worked out this method successfully between 1916 to 1920.

Merit has its reward. In 1920, he was appointed as Assistant Professor at the Bombay Veterinary College.

Again in 1922, he was selected to undergo Post-graduate study at Muktesar under Prof. J. T. Edwards prior to promotion to the Imperial Veterinary Service. He acted for two years in the Imperial Service, but the Government of India having accepted the Lee Commission's recommendations he could not be promoted to that service.

In 1924, he acted as Vice-principal. In 1926 and 1928 he acted as the Principal when the permanent Principal went on long leave. Wherever he got an opportunity, he demonstrated the truth that, given opportunities, an Indian is not inferior to any other in any walk of life. His present appointment as Principal is only a fitting and well merited recognition of his abilities.

He is not merely a Professor. The Bombay Government appointed him as Justice of the Peace in 1926. He is also an Honorary Presidency Magistrate.

Mr. Phadke is an active member of the Veterinary Service. He is the author of the Pamphlet "*Multivitellaria hewletti*—a new fluke discovered by him in an Indian house crow."

High laurels are yet in store for him. He is a learned Professor admired alike for his erudition as much for his clear exposition. More than all, he is not sectarian in his outlook. He is an Indian first, second and the last. He loves his students, past and present, as a father loves his children. He is a dear colleague much respected and admired by all those who worked with him and who have the pleasure to work with and under him now.

May Almighty shower His choicest blessings upon him.

A Graduate of Bombay Veterinary College.

To

THE EDITOR,

The Indian Veterinary Journal.

Dear Sir,

Thank you very much for your congratulations on my being the recipient of tbe Mysore Government's D. D. Scholarship—certainly the long expected result of the Veterinary Association's persistent struggles with the Government of Mysore. Being as I am, the responsible custodian of the precious print of your labour, I shall endeavour, to the best of my ability, to maintain the high expectations sought in me by those that were responsible for my selection.

A number of our professional brothren especially from the N. India, most of whom I have not the privilege to claim acquaintance with, have been sending me messages of congratulations on my being selected for the Second Parlakimedi Scholarship by the Indian Research Fund Association, an honour, which they seem to think, is the first of its kind to an Indian Veterinarian. Whatever the grounds on which such a surmise is based, I regret, I shall not be able to accept this honour, as my love to serve my State which was the first to repose in me her confidence and honour me with her kindness, is too great.

I shall, however, be very thankful to you if you will allow me, through the pages of your esteemed journal, to thank all those that have conveyed their messages of congratulations to me.

Yours faithfully,

LEIPZIG CZ.
June 5th, 1932.
P. M. NARAINASAMI NAIDU B.SC., L.V.P.

THE RINDERPEST MENACE.

HOW TO STAMP IT OUT EFFECTIVELY

To

THE EDITOR,

The Indian Veterinary Journal.

SIR,

Thousands of Malvi cattle are being exported from Central India to Maharashtra via Satpora Range. Rajput and Muhammedan dealers collect young Malvi bulls of one year old from the villages of Central India, the price for each animal being 10 to 15 Rupees. These animals are kept for grazing in the forest on the side of the Satpura, the grazing fee being one Rupee per head for the whole of the season. The Forest Department gets an annual income of about a lakh of Rupees from this source. To facilitate grazing, these animals are often divided into several camps.

CATCHING INFECTION EN-ROUTE.

The dealers set out with their respective herds, each containing about five hundred to one thousand young Malvi bulls. No cow is to be found in the herd. Some dealers take the route via Shirpur, Dhulia, Malegaon, Manmad, Kopargaon, Niphad, Sinnar, Sangammer, Narayangaon, Manchar, Poona and Nasatepur in the Bhor State which is the last destination. Some others take the second route via Raver, Bhusaval, Nandgaon, Yeola, Nevasa, Shevagaon Parhardi-jamkhed, and Barshi the final halt of this group of dealers. The dealers of both these groups do not always take the main road but use the by-ways in the hilly tracts where they can have free grazing. They visit the important cattle markets on the way and sell their animals to agriculturists through their agents on credit and recover their money while returning.

Similarly dealers from Central India supply he-buffaloes to the western part of the Satara District, the Southern Maratha States and Konkan where they are used as draught animals. The buffalo herds pass by the main road e.g. Bombay, Agra and Nasik, Poona. Some of the local dealers who distribute these animals belong to Kharsundi in Aundh State. After the annual cattle fair at Kharsundi this year, Rinderpest has spread to those parts where the animals from this fair have been brought.

THE PRESENT OUTBREAK AND ITS PREVENTION.

At present the Nagar District, parts of Sholapur, Satara and Poona Districts have been affected by the contagion. Nearly thirty-thousand inoculations by the serum alone method have been effected in Nagar District alone. Special Veterinary Surgeons, have been sent on special duty and the Government is trying their best to cope with the situation. The mortality due to Rinderpest is nearly 35% of the attacks. Inoculations by Serum-simultaneous method is impracticable under present circumstances. When the animals are inoculated by the S. S. method, they have to be segregated for a fortnight at least. The farmers are not willing to keep their animals for such a long period without work and also arrangements of feeding and shelter to so many animals cannot be made available by them.

THE SOURCE OF OUTBREAK.

Inquiries made at the infected villages prove without doubt that the infection was carried there by the Malvi herds of the dealers. The tracts which have not been visited by these dealers are free from contagion. So it is clear, that the movement of the Malvi herds is the main cause of the wide spread conflagration of Rinderpest throughout the Central division of the Bombay Presidency. Originally, the herds of bulls or buffaloes are generally free from rinderpest. But on the way the herds catch infection and carry it to all the places they visit on their way to destination. Being good draught animals they can be had at moderate prices and as the dealers have to spend comparatively very little for feeding, the prices do not go very high. So the trade of these animals is mutually beneficial to both these parts of India. We therefore do seek the services of these dealers but at the same time we do not want to lose our own cattle by such diseases as Rinderpest due to the movements of the same herds. What is the remedy?

THE REMEDY.

If the Veterinary Department thinks of inoculating animals of the dealers by the S. S. method when in camps on the Satpura Range, it will be an effective way of saving cattle from Rinderpest. The animals will be found segregated in one tract. They will be practically in charge of the Forest Officers. With the co-operation of the Forest Department, the C. V. D., ought to be able to induce the grazers to get their cattle inoculated with S. S. method. The S. S. method can give an immunity from the disease for some years; and at least the movements of the herds will not add to the disastrous results of rinderpest. When there would be no danger of spreading the contagion from village to village, the S. S. method can be effectively used in case of isolated infections.

The dominions of H. H. the Nizam, the Central Provinces and Berar also depend upon these dealers for the supply of Malvi cattle. And movements of the cattle through these parts also cause Rinderpest to spread. So, in the interests of agriculturists of those parts of India, the Nizam Government and the C. P. Government can very well co-operate with the Bombay Government for the purpose of checking the evil at the root. If the Provincial Governments hesitate for some reason or another to take this task, it is high time for the Government of India to look into the matter and improve it.

Yours faithfully,

S. G. NAWATHE B. A.,

Secretary, the Poona District Cattle Improvement Association.

Book Reviews.

The Veterinary Bulletin.—We have much pleasure to note that Vol. II of the *Veterinary Bulletin* is issued monthly from January 1932, and will run to about 864 pages, including the index for each monthly issue and the final classified Volume index This publication is a much needed one in India, where Library facilities are few and far between.

This is an "abstracting Journal dealing with current literature and includes references to all important British and foreign scientific work relating to Veterinary Research, Administration, Public Health and Education". The subjects are classified under exhaustive headings leaving nothing to be desired. It is a concise publication useful for ready reference by busy practitioners. The workers here can at least get an extract of an original article to which they may not otherwise get access. It is more useful now, being a monthly, because newer ideas can be had earlier in it than when it was a quarterly.

It is issued by the Imperial Bureau of Animal Health, Weybridge, Surrey, England, every month and the subscription is £ 2/- for the volume. post free to any part of the world.

We commend this Journal to our readers.

Annual report of the Civil Veterinary Department, Punjab for 1930-31.—Nowhere in India cattle breeding is receiving the attention it deserves as in the Punjab. Schemes after schemes are in progress with great success. Buffalo breeding also has been taken up during the year under reference. "For the first time in the province the total number of animals treated in the Veterinary Hospital passed the million mark"; the average daily attendance at the Lahore Veterinary College itself being 152,14. The preliminary standard of education needed for admission into the Punjab Veterinary College has been raised to Intermediate in Science or Arts. It is regrettable to note that due to the reduction in the scale of pay of Veterinary Assistant Surgeons and the prospect of unemployment after qualification, the number of candidates seeking admission "is very definitely on the downward trend".

Hæmorrhagic Septicæmia has carried away the largest number of cattle during the year. Next in order was Rinderpest. S. S. Inoculation against this disease is still to be extended on a large scale to rural areas. The Government record that "the demand for opening more hospitals is urgent. The Department is fortunate in that it has won the confidence of the people". We congratulate Mr. T. F. Quirke on the excellant work turned out in the Punjab.

Annual report of the Civil Veterinary Department, Bihar & Orissa for the year 1930-1931.—We read this report with considerable interest as it incorporates with itself the first report of the Patna Veterinary College. It pleases us to note that the College has made a very good start with efficient teaching staff and an administrative head whose zeal for his work is quite apparent. Much attention is being paid to the practical training of students, to fit them well for the work that is ahead of them. The cattle breeding and dairy farm attached to the College is a useful adjunct to the training of students. For a stock of over 700 animals, the farm seems to be very economically run, and the low mortality rate of nearly 3% is highly commendable. Here is again an example of unquestionable capacity of Veterinary Surgeons to undertake Livestock improvement work ! We are one with Col. A. Olver in the suggestion that a purely Tharparkar Breed be maintained on the farm instead of an assorted lot.

Under "Research" we read the following interesting statements. " Interesting observations were made on the inhibiting influence of other bacteria on Anthrax Bacillus isolated from a natural case of Anthrax in pony

"Smears from a crow reported to have died in an extensive fatal outbreak affecting both crows and fowls revealed Bipolar Organisms of Hæmorrhagic Septicæmia group."

" Elementary experiments are being conducted in the Bio-Chemical section to familiarise the assistants with the principles involved in the process of making the various protective sera."

With Professor P. G. Malkani at its head research work in Bihar is bound to go ahead.

We read with deep concern the sad statement that " though there was a great demand for inoculations from the ryots, Sera and Vaccines could not be spent as freely as before due to the fact that the expenditure for the same had to be controlled generally according to the budget provisions of the District Board." With what result ? The province had lost 1329 more animals during the year under report than in the year previous ! That is economy indeed !

It is said that S. S. Inoculation could not be carried out "as the virus received from Muktesar did not act when injected into goats." Local Virus could have been used or Madras could have been tapped. Where there is a will there is a way.

On the whole Major P. B. Riley deserves to be congratulated on his interesting report and a record of useful work turned out during the year.

Report of the Civil Veterinary Department, Assam for the year 1930-1931.—There seems to be a certain amount of hesitation in extending S. S. Method of inoculation against Rinderpest to rural areas : otherwise we fail to understand why it should be confined only to Government stock.

The following statement needs to be recorded. "During the last three years the Department has been carrying out experiments in the treatment of Anthrax in Bovines by the intravenous injections of Arsenic and the definite conclusion has been reached that this treatment can save a large number of animals" A detailed report on this will be an interesting record.

Annual Report of the Veterinary Department of Straits Settlements for the year 1931.—For the first time, this report has reached us just as we are going to the Press. The departmental activities are mainly confined, as the report says, to the applications of measures for excluding animal diseases from outside sources, controlling such outbreaks as arise within the territory, and in general, maintaining the animal health and welfare at as high a standard as possible. A perusal of the report indicates that this work has been done satisfactorily.

It is gratifying to note, a Conference of the Veterinary Officers of Straits Settlements was held in Penang, during the year for the first time, and the following subjects among others were discussed therein :— (1) Quarantine in all its aspects. (2) Rabies. (3) Rinderpest. (4) Hæmorrhagic Septicæmia. (5) Animal Husbandry. (6) Recruitment and Training of the local born candidates for employments.

Unlike the reports to which we are accustomed in this country, this one deals with the interesting matters as Imports, Exports, Animal census, Poultry diseases, Animal husbandry and many othor useful matters. The Principal Veterinary Officer deserves credit for the work recorded in the report.

Annual Report of Civil Veterinary Department Bengal and Bengal Veterinary College, for the year 1930-31.—The year records the lowest mortality among cattle for the last 14 years. Rinderpest as usual claimed the heaviest toll. Attempts are being made to push on S. S. inoculation with the help of demonstrations. Mysore, Madras and some other parts of India have long ago passed the stage of demonstrating the utility of this method of inoculation and have been pushing on this work on a large scale. It is gratifying to note that Bengal, though late, has taken this work earnestly at least now,

The Government review refers to a valuable report submitted by the Department and the experts at Muktesar after a joint enquiry into the causes of Hæmorrhagic Septicæmia, which caused serious mortality at the Rangpur Cattle Farm. The report seems to have suggested remedial measures and the Government hopes for satisfactory results after their adoption. It is hoped that this report will be published for the information of the public.

It is good that the Government recognises that much remains to be done in the direction of Veterinary aid for the ordinary care of animals in the mofussil. It is no good if the Government keeps quiet after recognising this fact throwing the responsibility of providing the necessary help on the Union Boards, as the review suggests.

The college continues to do much valuable work under the able guidance of Principal A. D. MacGregor.

The Royal Calcutta Turf Club has very thoughtfully made a very useful and handsome gift in the shape of a portable set of an X'Ray apparatus to the College. We congratulate the College and the Club.

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Editorials.

THE PLACE OF VETERINARY SCIENCE IN RURAL RECONSTRUCTION.

It will be remembered that soon after the Montford Reforms were ushered in about 12 years ago, the cry of "Go back to the village" was louder than ever and Rural Reconstruction was on everybody's lips. It looked as though they were going to create a new heaven on earth. The poor starved ryot looked in amazement and was joyous beyond measure at the prospective return of the old days of the alleged milk and honey flowing in the land. Witness after witness appeared before the recent Royal Commission on Agriculture and pleaded on behalf of the ryot for "Education, Health, Debt-redemption, Arbitration, Temperance, Agricultural improvements of all sorts, Marketting produce, Subsidiary Industries" etc. But not one of them spoke about the vital need of Veterinary Aid in rural areas, with the importance it deserves, to preserve the Cattle wealth of the ryot under the new dispensation.

What will debt-redemption mean if the poor ryot is going to lose his cattle year after year from mostly preventable causes? Will Agricultural improvements of all sorts mean much if the land is to be depleted of much of its Cattle from the ravages of epizootics? A well-meaning Minister even went to the extent of founding a Rural Reconstruction Fund. We don't hear so much now-a-days of Rural Reconstruction. Probably it is merged in the louder cry for Constitutional Reforms. Whatever it is, we will not be overstating the case, if we say that any scheme for development of rural areas will not be complete, if it does not provide for adequate Veterinary Aid.

In a predominantly agricultural country, where 95% of the population lives in the villages, does it need much imagination to state that the prosperity of the nation is intertwined with the prosperity of the village? Of the many things that contribute towards the prosperity of the village, the cattle wealth may be said to be of primary importance. If that is not taken care of in the way we ought to, we lay our axe consciously or unconsciously on the very roots of national prosperity.

The indebtedness of the Indian ryot even normally is more than he can bear. Through marriages and deaths, through rituals and rites—customs which man has inflicted on him—he easily gets into the hands of village Shylocks and try however much he may, he scarcely gets out of their clutches. Nature with her annual freaks either in the form of floods or draughts, very nearly drives him to despair. He curses his existence; he is unable to look into the face of the ill-fed woman of the house and the little brood of children. Even under such depressing conditions, he struggles hard to keep his cattle fed and alive. The ordeal is too great for him to stand. The Cross too big for him to bear. He questions the justice of it all. He doubts, he hesitates, he hopes and he lives; But Lo! inscrutable are the ways of Providence. Misfortunes never come single. Cattle disease breaks out in his village. He is at a loss to know what to do. He seeks the help of the village Munsiff and the Tahsildar to get him some form of Veterinary Aid. It is not coming either for love or for money. The Veterinary staff are busy in another village; and by the time they come to his rescue, he loses his only pair of bullocks on which he was building his hopes of better days. It is all gone. He weeps bitterly. He remembers he has not even cleared the loan he took for the purchase of those bullocks. Where is he to go for further money? He lifts up his tear stained eyes to Heaven and asks for the mercy of the Lord. Some to drown their unbearable sorrows take to that master of all evils—the Drink and that completes the ruin.

No one who has gone into interior villages and stayed there in the midst of misery, squaler, dirt, disease and death, will consider the above picture over-drawn. The ryot who puts up a manly struggle against all indebtedness, breaks down like a hollow reed the moment he loses his cattle and makes a miserable picture. Is there no remedy? Is there no cure? Certainly there is—only it is not made available to him in the way it ought to be.

Having created the demand for Veterinary Aid, it is highly deplorable that the profession is not able to meet it. People come running for inoculations; either there is no serum or the Touring Veterinary Assistant Surgeon is busy in one village and is missed in hundred and one villages. Municipalities, Taluk Boards and District Boards ask for opening of Veterinary Hospitals, but the request is brushed aside on the plea of want of hands. If the popularity of existing institutions is any criterion for need for more hospitals, well, those who are in the know of things will confidently say there is an urgent, immediate and absolute need. In fact there ought to be a net-work of such hospitals in rural areas. Then the Veterinary Aid will be near at hand and available at short notice.

After all that has been said above, there may be people, mostly outside the profession who would like to know if really there exists so much either on the preventive or curative side as to warrant their serious, earnest and immediate consideration. They might like to know our credentials for what they may consider to be a big claim on behalf of our profession. We shall certainly lay these before them. We do not say that we have a 'cure-all' for every disease. But let us see how far we have effective prophylactic measures with regard to the very many diseases that carry away cattle in lakhs and lakhs every year. We shall be as brief as possible,

First and foremost we have Rinderpest. It has rightly been called Cattle-plague. The S. S. method of inoculation now in vogue has saved many thousands of cattle. Is that at least made available fully in rural areas? Is not the ryot becoming more and more miserable through a preventable disease like this for want of Veterinary Aid and the country poorer day by day ?

Next in order we have diseases like Black-Quarter. Haemorrhagic Septicaemia, Anthrax, Sheep-pox, Fowl cholera, etc., against all of which there are very effective prophylactic inoculations or vaccination. And yet, where are the necessary numbers of people to carry them to places where required ? On the curative side very many of the sporadic diseases are amenable to treatment. This is being done in several veterinary institutions. But their number is negligible.

Thus a Veterinary Surgeon in rural areas can be of much use to the ryot. He can advise him *on principles of breeding ;* help him to develop a good strain of cattle ; castrate all his scrub bulls ; teach him sound principles of feeding and rearing of calves, amongst which the mortality is very high due mostly to deficiency diseases, parasitic infestations or digestive troubles, most of which can be rectified ; as these calves grow, he can protect them against diseases like Rinderpest, Black-Quarter, Haemorrhagic Septicaemia, Anthrax etc., as occasions arise ; he can guard against communicable diseases from animals to man, such as Tuberculosis, Anthrax, Rabies, Variola, Undulant Fever, &c., he can advise the ryot on the care and treatment of dry cows ; be of great help in cases of difficult parturition and serve again as adviser in pre and post Natal care and treatment ; he can relieve the dumb animals of much pain and misery by attending to other non-contagious diseases ; he can tell the ryots how the country is losing lakhs of rupees through indiscriminate branding. Thus and in many ways he can help the ryots to reduce the Cattle mortality to a very appreciable extent and thus contribute his humble share towards National prosperity.

We have written at some length on this subject. Many people have neither the time nor the inclination to bestow enough thought on what we consider to be a matter of first-rate importance in any scheme of rural development. If our attempt to present the matter in all its aspects should stimulate enough interest in those responsible for Rural Development, we would feel more than compensated for the little trouble we have taken.

A VALUABLE COMMUNICATION.

Major General Sir Bernard James, C.B., C.I.E., M.V.O., Secretary, National Horse Breeding and Show Society of India, has sent us a valuable communication,which we publish elsewhere in this issue, and we are certain that the profession in India will feel thankful to him for the inspiring letter.

He presents in it yet another phase of live-stock improvement which is deplorably neglected in this land. Even in these days of mechanisation, the horse will still be required in the realm of sports, in cross-country transport for military needs and probably for agricultural pursuits as well. With potentialities such as those existing in this vast country, it is a matter for extreme regret that powerful private agencies do not move in the matter, on a co-operative basis at least. The landed aristocracy with vast stake in the country should set an example to others. Where all these are lacking, the Government atleast should move in the matter. National Horse Breeding and Show Society of India is really doing yeoman service in this direction; "but" says Sir Bernard, "its efforts are much handicapped by the lack of facilities in India for research in the question of genetics and equine diseases." He is not an Arm-Chair critic but one who is out in the field roughing all the vicissitudes of a new undertaking. Who will not agree with him when he says " I feel sure that you will agree that a higher standard of knowledge of genetics generally and more wide-spread information on the subject of the prevention of equine diseases would assist materially to this desirable end." We wonder what those who have anything to do at all with these questions, have to say to such a well-reasoned criticism. We consider that Sir Bernard James's suggestion is very timely. The curriculum of studies in Veterinary Colleges in India is to be shortly scrutinised by an Expert Committee and Disease Investigation Officers are to be recruited in the several presidencies. We hope these remarks coming from one who knows what he is speaking about will be borne in mind by those undertaking the above tasks.

A MORAL FROM THE WEST.

Our British Colleagues have celebrated the Jubilee Congress of the National Veterinary Medical Association of Great Britain and Ireland, on the 8th of August 1932, at Folkestone with a pomp and grandeur worthy of the occasion. We most heartily congratulate them on their achievement.

To run an Association for fifty years and with the success that has attended the N. V. M. A., is no mean task for a small profession like ours. And yet, Britain has done it and may we hope that we of the slumbering East will wake up and follow her worthy lead?

Of what use is all of our tall-talk, of past greatness, of equipping ourselves with all that is best in the world in our profession; of falling in line with other nations: of making India self-contained in matters Veterinary, etc., etc., if we are not able to organise ourselves properly and run even *one* meeting a year in such a huge sub-continent as India.

The blame if any is all on the stalwarts of the profession who are holding out from such organisations and not on the rank and file who have struggled hard under most adverse circumstances to do their 'bit' to the profession. Let them realise that such an attitude of the proverbial "Cat on the wall" will do good neither to themselves nor to the profession. In the Great March which must move the profession sooner or later, they are sure to be left behind, for posterity to remember them as men who took everything from the profession and gave nothing in return to sustain and improve it. No Indian Veterinarian can bestow a moment's thought over the present plight of the All-India Veterinary Association and its annual Conferences without a sense of humility. What is needed is not passive sympathy, but active work.

The lesson from the West is very encouraging and we hope that it will not be lost on the Indian Veterinary Surgeons.

Mr. P. T. SAUNDERS AND UNIVERSITY AFFILIATION.

While presiding at the inaugural meeting of the Madras Veterinary College Medical Association on the 18th of August 1932, Mr. P. T. Saunders, the Director of Veterinary Services, Madras, gave public utterance to his opinion on the question of affiliation of Veterinary Colleges to Universities, which coming as it does from such responsible quarters deserves careful consideration at the hands of all interested in the question.

He said "If the University would give a degree and let the Director at the same time graduate men from the College, well and good. But if they wished to control the studies of the College, if they wished to put higher still the entrance examination of the College and make the College worthy of affiliation in every sense of the word, then there would be difficulties". We concede that this is one way of solving the problem. But looking ahead we could see it would be creating a professional "Caste system" of high and low, the results of which would be disastrous. There will not be much harmony inside the profession and much cantankerous propoganda of one against the other will only retard, nay, permanently damage the progress of Science.

Being an infant profession, luckily we have precedents in other departments to be guided by, in the Presidency of Madras itself. We would invite the attention of the learned Director to the fact that the sister profession of Medicine is deploring the existence of such divisions in its ranks. Various attempts have been made from time to time to do away with the Sub-Assistant Surgeons. It is all contemporary history well within the knowledge of the present generation. But our Medical brothers feel helpless now to undo the wrong. They have gone too far. In fact raising the course of the S.A,S's to very nearly five years now, is only introducing the thin end of the wedge to make a last and stupendous effort. They had another class called the "Apothecaries". They have done away with it.

Take again the profession of Agriculture. They had such divisions too. They have stopped recruitment to Pass-Course, Lower Subordinate class, etc. All these have been made after trying the experiment now proposed by Mr. Saunders. The evils that accrue and retard the healthy development of the profession outweigh the advantages of the measure of expediency, which the Director has in mind. In trying to meet the needs of the hour, vital interests of either the profession or of the country should not be sacrificed.

Both of our sister professions need men and more men, urgently, like us and yet they have tried to raise the standard and allow their men to go out with the hall-mark of the University. There can never be too much of interference by the University authorities in the management of professional Colleges. We do not believe that the Medical and Agricultural Colleges are any the worse for their affiliation to the University. If anything, the status of those departmental heads and their Colleges has increased considerably. After taking the University degree, scope for specialisation in particular subjects should be available to such of those who are so incilned. But the minimum qualification for a general practitioner must be the Universitity degree. That will raise the status of the profession that will fit our men for better and more advanced work; that will bring them in line with other scientific professions.

We appeal to all concerned to bestow some thought over our suggestions and hasten the day of affiliation.

TWO MORE VETERINARIANS LEAVE FOR POST GRADUATE STUDIES.

We have much pleasure in noting that Messrs. G. R. Visvanathan and M. Lakshman Raju have gone to Edinburgh, Royal (Dick) Veterinary College, for training in Tropical Veterinary Science and Pharmacology respectively. We have to congratulate the Subordinate Veterinary Service of Madras for having in their midst men who sacrifice, in these hard times, any savings they may have had in the cause of knowledge. Two have already returned and two more have gone at their own expense. We hope the Government, on their return, will avail of the opportunity of utilising their knowledge by giving adequate opportunities to them to make use of that knowledge to the fullest extent.

Original Articles.

A COMPARATIVE STUDY ON CERCARIAL FAUNA IN MADRAS. *

BY

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Liston and Soparkar (1917) first started the study of Cercariae in India and began with the life history of *Schistosoma Spindalis*. Montgomery (1906), and Kemp and Gravely (1919), investigated into the possibilities of the presence or the introduction of Human Schistosomiasis in India by Troops returning from overseas. Sewell (1919) studied about the possible occurrence of *S. japonicum* Katsurada. (1904), in India. Soparkar (1921) published a full account of the Cercaria of *S. spindalis* and also a few other furcocercariae in *Planorbis exustus* (Deshayes) in Bombay. Sewell (1922) continued and amplified the work already commenced, and published his valuable monograph on *Cercariae Indicae*. Hamilton Fairley and Jesudasan (1930) in their "Studies in Schistosoma spindale" confirmed and amplified the work done by Liston and Soparkar on the life history of that parasite. In doing this the workers have published their observation on the Cercarial Fauna in the town of Bombay, and Sewell in the town of Calcutta.

In the Madras Presidency, Sewell (1922) studied the Cercarial Fauna of only the Nilgiri plateau, Wynaad with the adjoining plains of Malabar and Southern portion of the Chilka lake. It was therefore

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* Received for publication on 10-9-32.

thought that the publication of the study on the Cercarial Fauna in Madras may be of some use to future workers.

In Madras there are a number of tanks, which do not dry up in any season and most of them contain a fairly large number of fresh water snails, affording enough material for such study. The Spur Tank, Egmore. was chosen for the purpose owing to its proximity to the College Laboratory, and it is one which is used by a fairly large number of cattle from the surrounding localities.

Collections of two species of molluscs, viz., Planorbis exustus (Deshayes) and Limnea leuteola (Lamarck) were made in every month from January 1931 to the end of that year. The test-tube technique, practised by Leiper (1915), was followed because this was found to be more rapid and less elaborate than actual dissection of all the mollusca collected. This method was also followed by Soparkar (1921) and Hamilton Fairley and Jesudasan (1930). Limnea species have the habit of crawling out of water in the test-tube on to its edge and falling over, and to prevent this, tubes containing snails of that species were lightly plugged with cotton wool. The tubes were left over night and the total number of snails discharging cercariae were noted, the cercariae studied and classified. The snails that did not discharge any cercariae, within 24 hours, were kept for nearly a week and the results noted.

Kinds of Cercariae found.

(a) From Planorbis exustus the following Cercariae were obtained :—

(1) Cercariae Indicae IX Sewell 1922.
(2) do XXVI do .
(3) An amphistome Cercaria of Sewell's Diplocotylea group hitherto undescribed. (C. Kylasami n, sp.)
(4) Cercariae Indicae XVII Sewell 1922.
(5) do X do .
(6) Cercariae of S. spindalis.

(b) From Limnea leuteola the following were obtained ;—

(1) Cercaria Indicae XXIV sewell 1922.
(2) do XXIII do „ .
(3) do XIX do „ .
(4) A Furco-cercaria, undescribed hitherto. (C. saundersi n. sp.)
(5) A Furco-cercaria, undescribed hitherto and is under study.

In all, eleven species of Cercariae were obtained out of which three happened to be new ones. Double infection in Limnea leuteola has been observed on four occasions,

Cercariae Indicae XXIX was found by Sewell in Limnea acuminata (Lamarck) in Calcutta and in Limnea succinia (Lamarck) and

PLATE I

Percentage curves

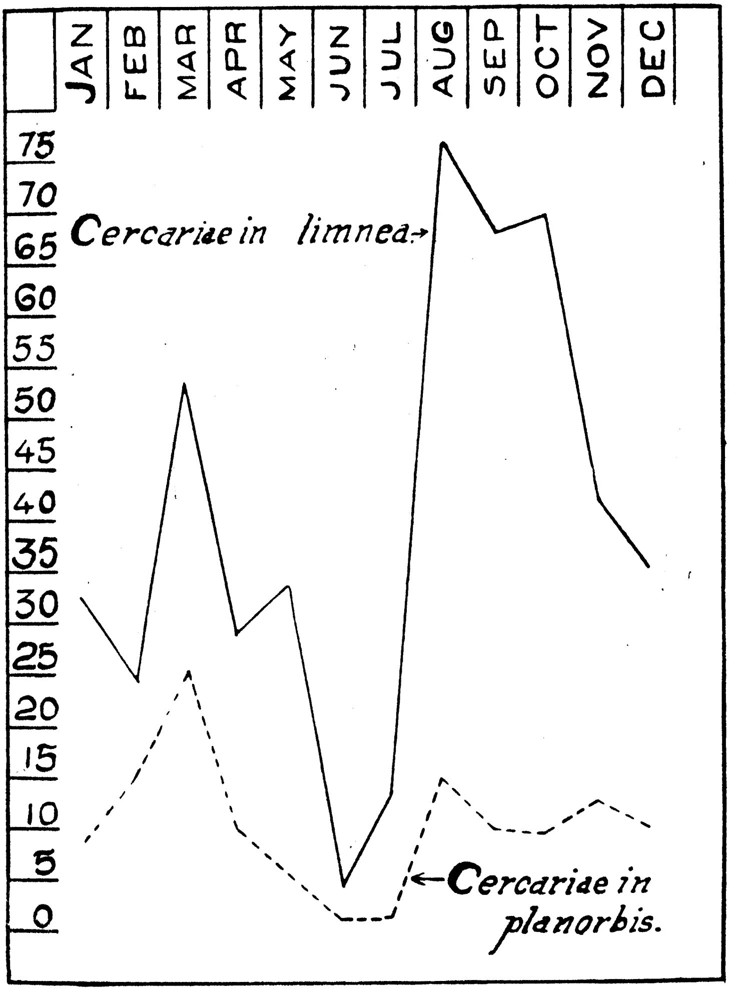
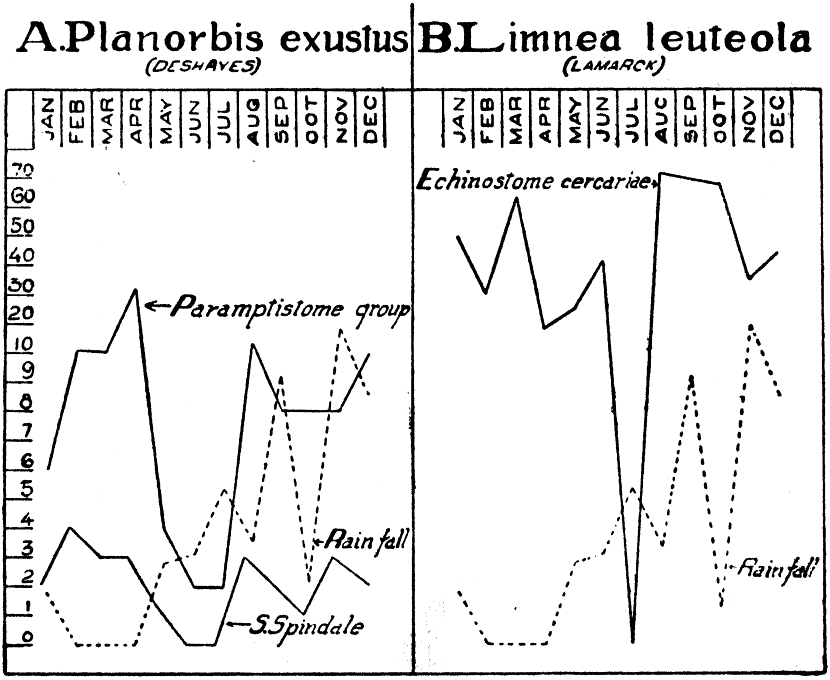


PLATE II



A. Planorbis exustus
(DESHAYES)
B. Limnea leuteola
(LAMARCK)
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
70
60
50
40
30
20
10
9
8
7
6
5
4
3
2
1
0
Paramptistome group
Rain fall
S. Spindale
Echinostome cercariae
Rain fall

Gyralus euphraticus (Mousson) in Wynaad. In Madras, it was obtained always only from Limnea leuteola. It appears therefore that it is not very selective as regards its intermediary host.

The cysts of Cercariae Indicae Nos. XXVI and XXIX were fed to calves and *Paramphistomum cervi* (Schrank, 1790) and *Fischeodreus elongatus* (Poirier, 1883) respectively were obtained. C. I. XXIII, Sewell 1922, was allowed to encyst on the gills of fish and in wild snails kept for the purpose. These were fed to dogs and cats and a species of Eupharyphium resembling E. malayanam (Leiper 1911) was obtained.

SEASONAL VARIATION OF INFECTION IN MOLLUSCA.

This was studied only in two species of mollusca, viz, P. exustus (Deshayes) and Limnea leuteola (Lamarck), from only one tank (vide supra). These observations have been based on the collection of mollusca every month for one year. A total of 2383 Planorbes and 2301 Limnea were examined on the whole. The attached graphs show the percentage infection in every month for all the Cercariae taken together and of S. spindalis, Paramphistome and Echinostome Cercariae taken separately. The rainfall during the year is also marked.

It is seen from the graphs that, excepting during the months of June and July, infection is found in snails in all the months to a greater or lesser degree, and there are two rises, one in March and another in August.

The curve of Cercaria of S. spindalis shows three peaks, viz. February, August and November, It is low or absent only in May, June and July. The curve for the Cercariae of Paramphistoma group also shows three peaks, in April, August and December, and the interesting point with this is that there is roughly a difference of four months between each peak. The curves for the cercariae in Limnea leuteola has only two sharp peaks, one in March and the other in August and the mollusc host is never free from infection at any time of the year, with exception of Echinostome cercariae which drops to zero in July.

Sewell (1922) working in Calcutta also observed a double rise in infection rate but there is some difference in the time of the year between that found there and that obtained for Madras.

As regards the Cercaria of S. spindalis, Soparkar (1921) working in Bombay, found the greatest incidence during the monsoon months in Bombay. Hamilton Fairley and Jesudasan (1930) on the other hand found that the seasonal incidence is low during the monsoon and fairly high during the cooler months. In Madras the graph shows that the incidence rate goes up to 3 per cent. during the rains and between 2 and 4 per cent. during the dry and cool months of the year. Though two rises in the incidence of infection rate of S. spindalis has been observed in three different places by different people, yet each one seems to get a different result as regards the monsoon and the infection rate. Hence it may be possible that there is no relation between the monsoon and the infection rate of Cercariae of S. spindalis, excepting indirectly in keeping the tanks supplied with water.

The curve of infection of all the Cercariae taken together in Planorbis is seen to rise with the monsoon and the reason for this is not quite clear.

Conclusion :—During his tours the author has had the opportunity of collecting and studying the Cercariae obtained from Mollusca in the Districts of Kurnool, Bellary, Anantapur, Chittoor and Coimbatore. It was found that Cercariae of S. spindalis could be obtained in fairly large numbers in Planorbis exustus, in all the Districts. It is strange that Cercariae of the liver fluke, *F. gigantica* (Cobbold, 1855) of cattle and sheep in India, has not been described hitherto though that parasite is fairly common in this country. The life history of many of the trematodes found in cattle in India have not been worked out and unless actual feeding experiments are made on susceptible animals nothing will be known about them, and the importance of knowing the life history of all parasites of animals of economic value is obvious.

SUMMARY

(1) Eleven species of Cercariae are available in the fresh water mollusca viz. Planorbis exustus and Limnea leuteola in the Spur Tank, Madras.

(2) Three of the species of Cercariae obtained have been found to be new to Science.

(3) Monthly infection rate in the respective species of snails have been plotted out in curves and their relation with the monsoon has been discussed.

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THE ETIOLOGY OF BOVINE NASAL GRANULOMA.*

BY

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INTRODUCTION.

There exists in India a peculiar chronic disease of the nostrils of cattle which in certain areas affects large numbers of animals and causes considerable loss to cultivators. The disease is known to exist in Assam, Bengal, Bihar and Orissa, Bombay, Central Provinces Madras, Mysore and probably also in Sindh. It has existed in certain places for decades but it shows no tendency to spread as an epizootic. The condition would appear to be confined to India as no reports are available from any other part of the world. The peculiar immunity of the buffalo against this nasal affection has been particularly commented upon in every province of occurrence from time to time. Interesting information is available from a certain enzootic area of the Bombay Presidency that although nearly all the animals in the village are watered from a common watertrough, no horses or buffaloes have ever been known to be affected with the disease.

Although there is little doubt that this condition has existed in India for a long time, the earliest printed reference in English to this so-called "Snoring Disease" would appear to be by Jeya Singh Raj [1910]. Krishnamurti [1922] was the first to demonstrate certain eosinophile, rosette-form bodies in histological sections, and he contended that the disease was a form of actinomycosis, since each of these bodies was considered by him to be a characteristic "ray-fungus". Cooper [1923] confirmed the above histological findings by studying tissues obtained from various provinces and further he [1923 and 1931] recovered repeatedly in pure culture a streptothrix organism from the lesions. Extensive experiments were carried out by him [1925] to transmit the disease artificially to healthy cattle, by housing in contact with naturally affected cases and by infection in various ways with a streptothrix isolated culturally from the lesions but with negative results. Das [1929] also carried out experiments in the field regarding the mode of infection and obtained negative results. With regard to treatment, Das [1929] showed that although Potassium Iodide exerted no beneficial effect, the curative value of Tartar Emetic, as claimed by Parthasarathi Naidu [1921] when working at Saidapet in the Madras Presidency, was undisputed.

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* Reprinted from The Indian Journal of Veterinary Science and Animal Husbandry II. 2.

In commenting on the failure of Potassium Iodide, Edwards [1929] stated :—"It may be that the condition is not in reality a streptothricosis, in spite of the fact that granules apparently indistinguishable from those of actinomycosis are discoverable in the lesions ". Cooper [1931] investigated a large outbreak in Jubbulpore a description of which has been recorded by Oxspring [1931], and summarised the position, on that date, concerning the etiology of Bovine Nasal Granuloma by saying that "since the disease is definitely amenable to treatment with Tartar Emetic, and this drug is of great value in the treatment of some protozoan affections, such as Kala Azar and Surra, it is reasonable to suppose that Bovine Nasal Granuloma may be due in reality to a protozoan organism. In 1927 Krishnamurti detected cases of nasal granuloma in cattle which were definitely due to a Rhinosporidium, regarded by some as a member of Protozoa, and certain facts have recently been collected by us indicating that it may yet be possible to correlate all the lesions found in cattle, including those at present believed to be due to streptothrix organism, with Rhinosporidium as their cause". In passing, it may be recalled with interest that Christopherson [1918] was the first to point out the almost specific action of Tartar Emetic in human bilharziosis in the Sudan.

The object of the present article is to record certain definite finding of the author in support of the view that Bovine Nasal Granuloma is a clinical manifestation of Schistosomiasis, where the worm seeks out the nose for the deposition of its eggs and as will be shown later, this view will readily explain all the known facts about the disease. It must be made clear here that there exists in India another separate and distinct affection of the nose of cattle and horses, namely, Rhinosporidosis as described by Krishnamurti [1927 and 1931] and confirmed by Professor Ashworth, the eminent Zoologist of Edinburgh, in a private communication. Nasal Granuloma proper can however be easily differentiated by its naked eye appearances and the specific microscopic features. Lesions of Nasal Granuloma are elevated nodular masses, intimately connected with the subjacent tissues by a broad base. Lesions of Rhinosporidiosis, as pointed out by Krishnamurti, are more fragile and pediculated being composed of softer and more spongy tissues.

Plate IX.

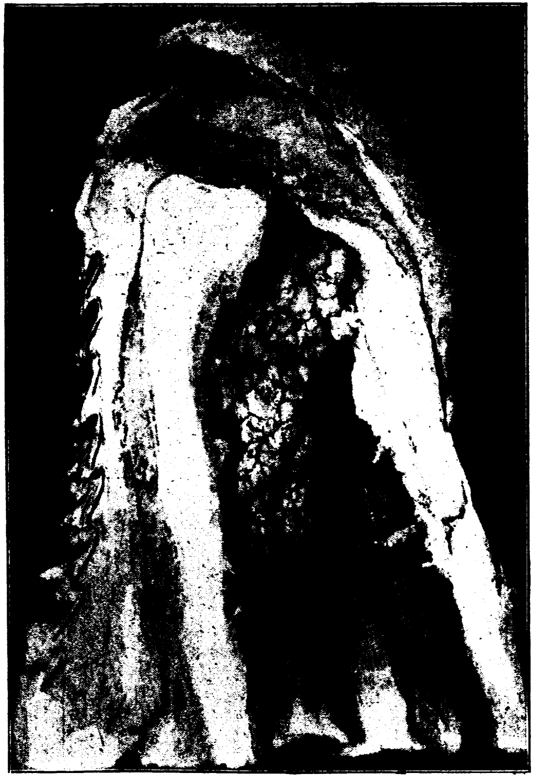

Fig. 1. Photograph showing growths on the mucosa of the lateral wall of the nasal chamber in its anterior third.

Plate XI.

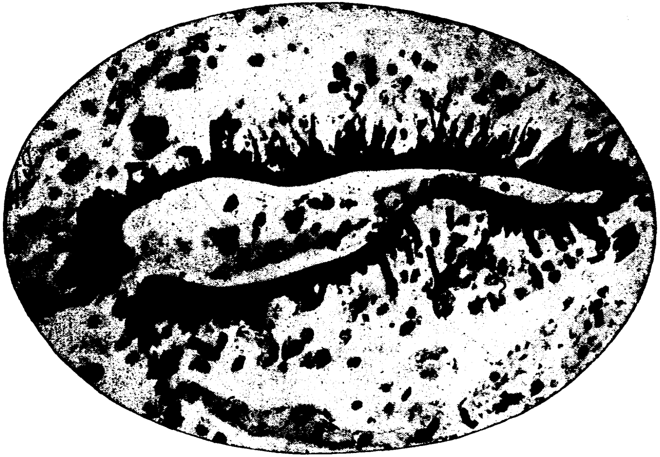

Fig. 3 (×400). Microphotograph of an "actino" body in section. The central cavity contains the cellular elements of the embryo,

Courtesy: "The Imperial Council of Agricultural Research."

Plate IX.

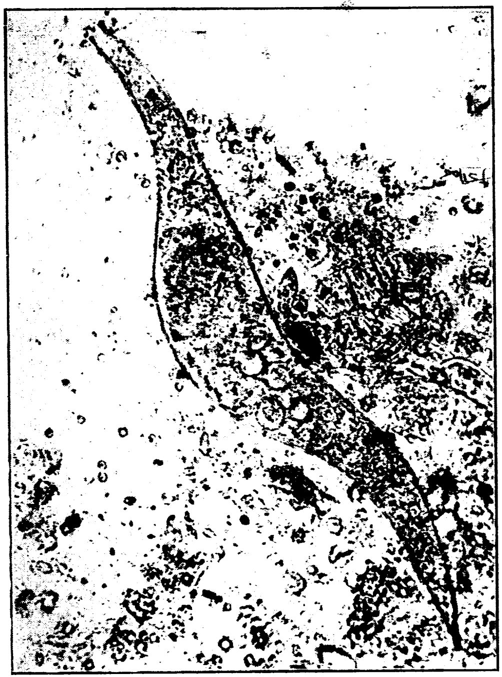

Fig. 2 (×400). Microphotograph of the "Spindalis" type of egg, found in the nasal discharge obtained from clinical cases at Muktesar. Note that one end is pointed and the other blunt.

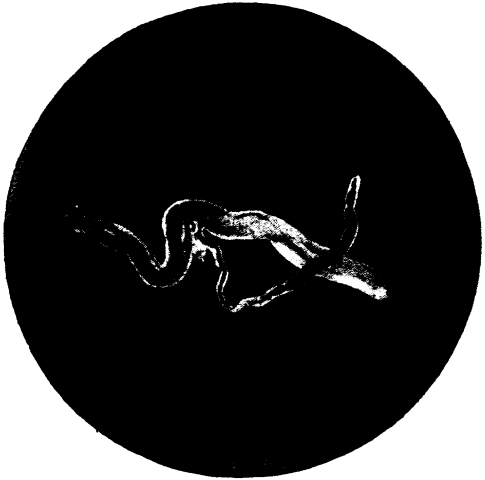

Fig. 3. Microphotograph of a pair of adults *in copula* in the fresh state, removed from the growth from a clinical case at Muktesar.

Courtesy : "The Imperial Council of Agricultural Research."

Confirmation of the diagnosis, initially made from the gross characters, can easily be obtained by microscopic examination by finding the characteristic rosette-shaped "actino" bodies in the former and the chitinous sporangium with spores in the latter.

CLINICAL DISEASE.

A constant running generally of both the nostrils, associated with noisy breathing and an occasional sneezing serves as the first indication of the disease. Apart from the symptoms of snoring and respiratory distress, which are markedly increased at work, there is no evidence of systemic ill health. The character of the nasal discharge varies with the development of the disease, being either thin serous, thick mucous, muco-purulent or sanguineous. The lesions of the disease first make their appearance at the alar margin of the nose and gradually make inroads posteriorly. Although the condition is a localised disease of the anterior nares, which is extremely well-suited for the extrution of the mature egg, in advanced cases the middle region or even the posterior region may be encroached upon. At the Museum of this Institute, there are mounted specimens of Nasal Granuloma showing growths (1) on the mucosa covering the septum nasi to about the middle (2) on the turbinated bones to near their posterior limit, and (3) on the mucosa of the lateral walls of the nasal chamber in its anterior third. Plate IX, Fig. 1 shows the last mentioned specimen, which was obtained through the courtesy of Mr. W. Harris, M.R.C.V.S., Superintendent, Civil Veterinary Department, Assam. Initially the nasal mucosa shows patches of congestion and exceedingly minute vesicular and papular elevations, which develop into rounded granular patches of inflammatory thickening. Palpation of the abnormal surface gives one the impression of roughened crocodile skin. On the "mulberry like" processes of granulation, yellowish areas are seen, the surface epithelium of which gives way producing minute shallow ulcers, through which the ova make their exit. In the course of the present investigations, the writer had the opportunity of examining at Muktesar six clinical cases of Nasal Granuloma, three of which were obtained from Jubbulpore in 1930 and the other three from Bihar in 1931. Examined under the microscope, a caustic potash preparation made from the shreds of mucus contained in the nasal discharge of affected animals reveals varying forms of Schistosome eggs, and young forms of the parasite. In addition to the above-mentioned six cases, nasal discharges from 3 clinically affected animals at Jubbulpore have recently been received and examined and eggs of the "Spindalis" type have been seen in each case.

Examination of the urine reveals certain rudimentary forms of the parasite but the fæces have been found on the other hand to be negative. It is to be noted that no mature ova have been discovered in the urine and no symtoms of bladder affection have been observed. The urine from these animals has been negative to the bensidine test for blood.

Roughly speaking, the varying ova found in the nasal discharge were (*a*) nonspind globular egg (*b*) round or ovoid egg with a single terminal spine which may be short or long slender throughout the length or broad at the base (*c*) an ovid—elongated egg with double terminal spine (*d*) an egg of the "Spindalis" type (Pl. IX, fiig. 2.), as first described in India by Montgomery [1906] and also found by Vriberg [1906] in Sumatra. The exact significance of so many types of eggs is not clear.

Young, developing adult worms were also seen in the nasal discharge. The young males are short and tuberculated with a prominent ventral sucker, which in most cases being of yellow colour makes detection easy. The ventral sucker approaches the anterior end of the worm, as it develops. The young females are rather long and filiform.

Adult Schistosomes as seen in Pl. IX, fig. 3 have been removed at Muktesar from the diseased tissue. This was removed surgically by slitting open the nose, and deep sections were removed from the most posterior portion of the growths as they were most likely to contain the healthy adults. An adult male was first isolated from the blood and other fluids collected during the surgical operation.

PATHOLOGICAL HISTOLOGY.

The material for histological study was obtained from specimens, which had been collected at this Institute from about 12 cases of the disease from Assam, Bombay, Mysore Bihar and the Central Provinces from 1922 onwards.

Although other forms of bilharziosis, such as urinary and intestinal, are frequently associated with a tendency towards malignancy and the formation of polypoid growths, the essential histology of Bovine Nasal Granuloma is simply that of granulation tissue, the exact character of which depends upon the degree and the duration of the infection. An early growth is made up of very vascular young connective tissue, fibroblasts in activity being in evidence. Old tumours are not so highly vascular and contain a considerable amount of well formed fibrous tissue. Eosinophilia, which is a notable feature of Nasal Granuloma, may be localised in the periphery of the *follicles*, to be described later, or may even be diffusely scattered.

The epithelial covering of the growth is nearly completely intact excepting for areas showing ulceration. The epithelium covering active lesions shows inflammatory softening and may be actually thinned down due to the pressure exerted by the ova attempting to work

Plate X.

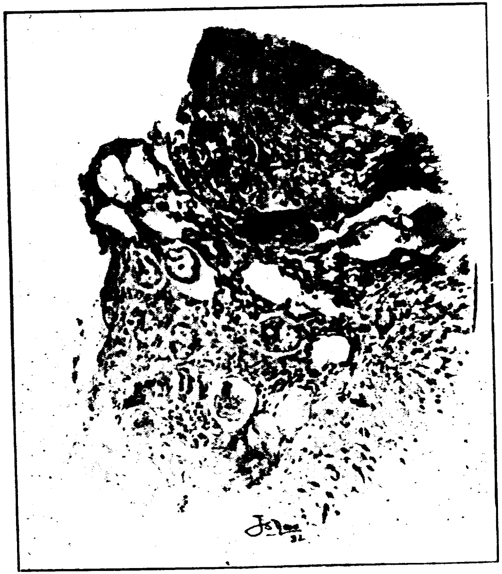

Fig. 1 (×200.) Microphotograph of a section of the growth showing the epithelium thinned down and raised due to the pressure exerted by the subjacent ova, about a score of which can be seen here.

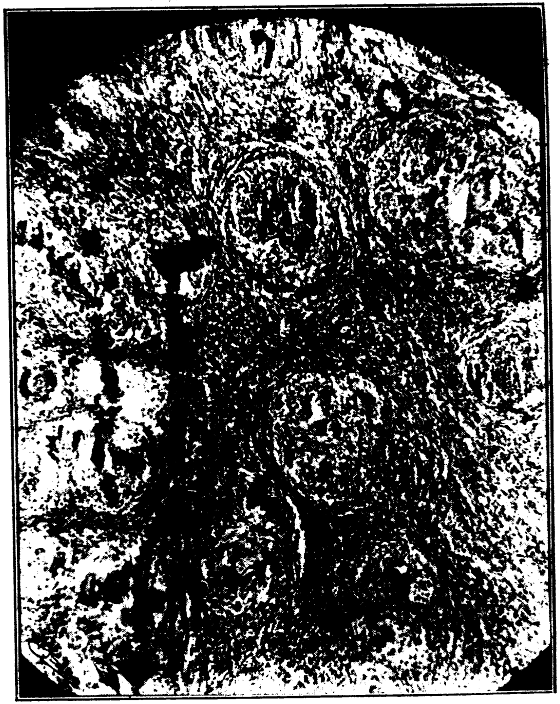

Fig. 2 (×80). Microphotograph of a section of the growth showing follicles with giant cells and "granules".

Courtesy: "The Imperial Council of Agricultural Research."

Plate XI.

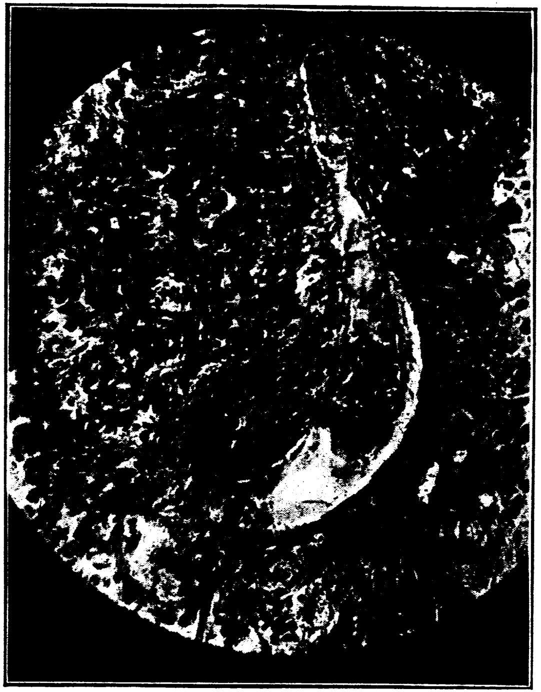

Fig. 1 (× 400). Microphotograph of the "Spindalis" type of egg in the tissue, showing the blunt and the pointed ends. Note its similarity with microphotograph No. 2, Plate IX.

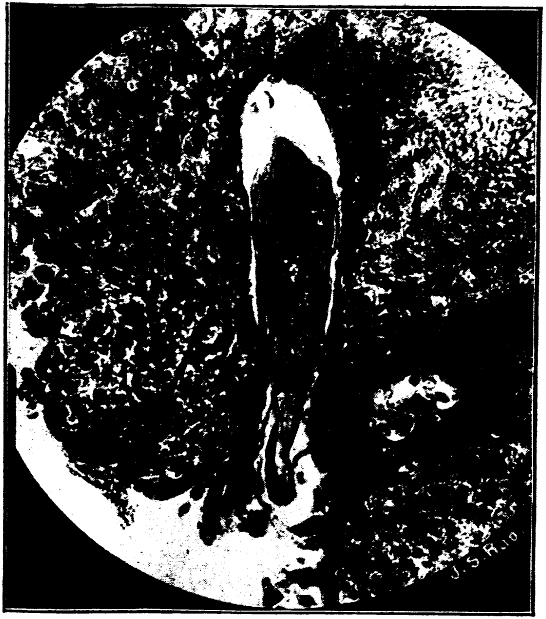

Fig. 2 (× 400). Microphotograph showing a fully matured miracidium still attached to the spiny portion of the egg, lying in the space left by the egg. The caudal extremity of the embryo can be seen inside the egg shell.

Courtesy: "The Imperial Council of Agricultural Research."

their way out. (Pl. X, fig. 1.) Occasionally the apices of the epithelial papillæ are found infected and may show degenerative changes. It is primarily in the submucosa that the ova are deposited in quite appreciable numbers, determining the nodular vascular masses of simple elevations of the mucosa which charaeterise the disease. The submucous connective tissue is rather loosely disposed and may show channel formations.

The most characteristic microscopic lesions of Nasal Granuloma are represented by the *follicles* (Pl. X, fig. 2) the central core of which presents what has been considered by Krishnamurti [1925] to be "actinomycotic granules" surrounded by a characteristic "ray fungus" or "club" formation. The lesions are observed to follow a sequence of events, starting with a destructive abscess around the offending parasitic mass. The individual microscopic lesions that are formed in this manner are nodular abscesses, which are mainly cellular in character being composed of small round cells, endotheloid cells and polymorphonuclears. Having failed to extrude the irritant by a destructive process, an attempt to completely encapsulate the irritating ova is made and the process of repair as manifested by eosinophile cells and fibroblasts sets in. In places certain follicles are seen being exclusively composed of small round cells without any remnant of the parasitic element being discoverable in the centre. The appearance of some follicles would appear to be due to the section having passed through the periphery of the nodule. In early follicles, the young ova are seen surrounded by many layers of typical endotheloid cells with the formation among them of huge giant cells immediately surrounding the ova or in their neighbourhood. Evidence of degeneration with diffuse staining and broken down nuclei is seen in the centre of some follicles, in others the parasitic mass has been removed with a few giant cells still persisting, notwithstanding the maturity of the fibrous tissue supporting the follicles. In advanced lesions, the ova undergo calcification or are resorbed or totally digested by the "foreign body" giant cells and no eosinophilia may be present in the altogether fibrosed nodule. With the simultaneous fibroblastic activity and eosinophilic infiltration, concentric rings of fibrous tissue gradually invade from the periphery inwards until the lesion may be considerably fibrosed. From the above description of what have been designated as *follicles* by Krishnamurti [1925], in association with the presence of "foreign body" giant cells, it will be observed that the follicles appear to be identical with "a typical bilharzial *pseudotubercle*" of Fairley [1920].

Now in regard to the peculiar bodies, "the clubs", Krishnamurti [1922] has considered them to be specific and of causal significance. These bodies are quite gram-negative but stain well by Plaut and other methods used for actinomyces. The "clubs" or as the present author prefers to call them, the "actino" bodies of Nasal Granuloma present certain definite peculiarities as compared with those of classical actinomycosis. Unlike actinomycosis, the central cavity within the "actino" body of Nassal Granuloma is definittely bounded with a thick, highly refractile capsule of hyaline nature and contains no gram-positive microorganisms or streptothrix filaments but reveals nuclei of the parenchymatous cells of the enclosed larva instead. This central cavity takes varying shapes up to that of a "Spindalis" type of an egg and contains in most cases a granular body or may even be empty, depending upon the angle at which the egg is sectioned and upon whether the enclosed larva is sufficiently differentiated for well defined structure to be recognisable inside it. In some shells, however, definite structures of the parasitic embryo can be seen.

The author agrees with Colebrook [1930] who states:—"The first point—and it is not at all new—is that the formation of "clubs" is not a specific character of mycelial infections. Thirty years ago it was shown that clubs were formed around a mass of dead tubercle bacilli implanted into living tissues and since then this has been demonstrated in many other circumstances." It is now known that the actino-bacillus, staphylococcus and B. pyogenes can produce "clubs". Recently Beaver [1931] has found a colony of staphylococci in the centre of a small abscess assuming morphological resemblance to *Actinomyces hominis.* The present investigation and another by Yamagiwa [1931], which is referred to below, have revealed that the same reaction in the shape of "actino" bodies can be produced also in helminthic infections, such as by Schistosomes. As "actino" bodies may be present in such divergent conditions as detailed above, it is clear that they cannot be considered specific. In what the author considers an earlier stage, the capsular body containing the parasitic mass is seen encircled outwardly with a pale blood-tinged fluid and later with certain changes the capsular body is encircled with numerous closely adjacent eosinophile club-like processes arranged in a radiating manner. The exact significance of the eosinophile "actino" bodies is not clear but it is undoubtedly a manifestation of the host's reaction and attempt at delimiting the ravages of the parasitic worm or of its toxin. In dealing with Madura disease and Actinomycosis, Kanthack [1893] has expressed the same opinion thus:—"Cubs are only formed when there is evidence of resistance on the part of the tissue towards the microorganisms. In rapidly spreading and extensive cases, little or no club formation may occur". Yamagiwa [1931] has encountered a similar reaction of "clubs" outside the parasitic shell in the study of lesions caused by *Schistosoma turkestanicum.* The interesting figures of degeneration of the egg shell given in support of his paper

Plate XII.

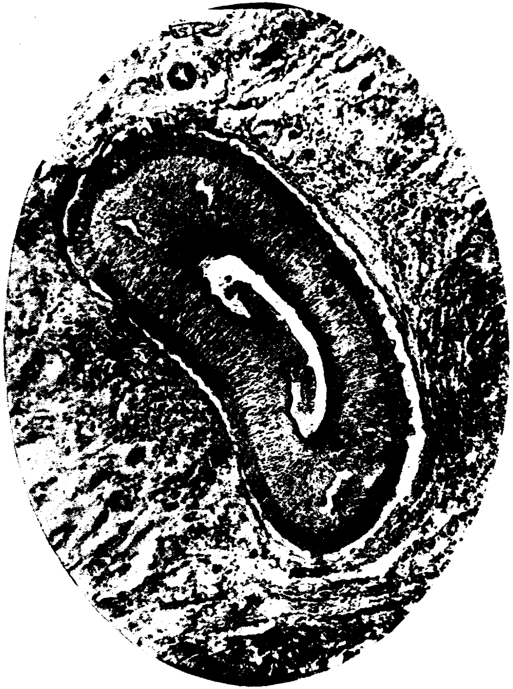

Fig. 1 (×400). Microphotograph of a transverse section of male worm in the tissue showing cuticular tubercles.

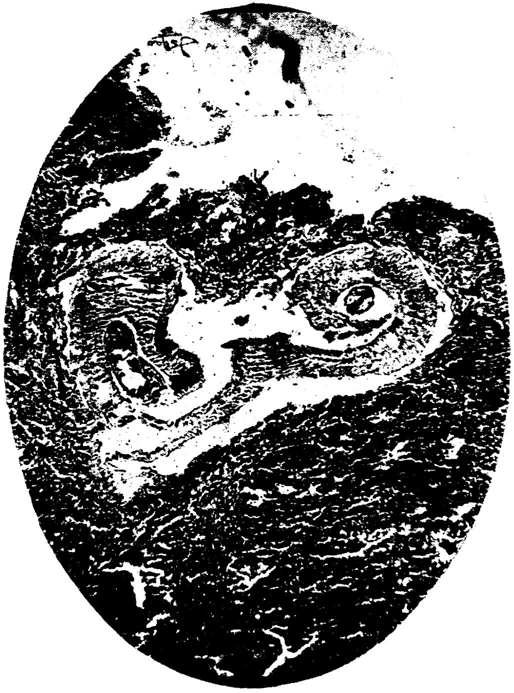

Fig. 2 (×80). Microphotograph of mature worms *in copula* lying in the tissue. No remnant of vessel endothelium or glandular epithelium is recognisable.

Courtesy: "The Imperial Council of Agricultural Research."

Plate XII.

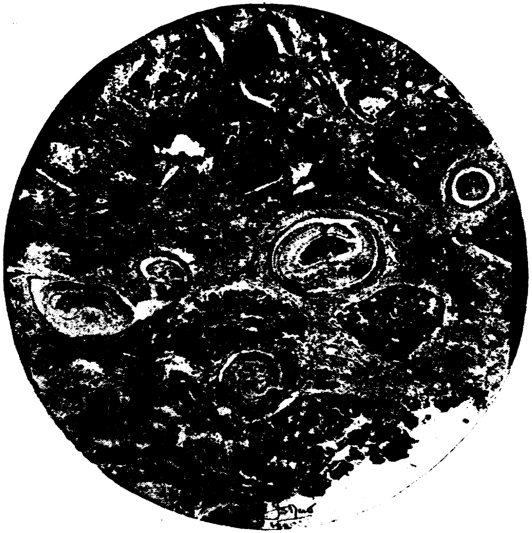

Fig. 3 (×120). **Microphotograph of a deep section showing mucous glands and blood vessels, which contain several pairs of worms *in copula*.**

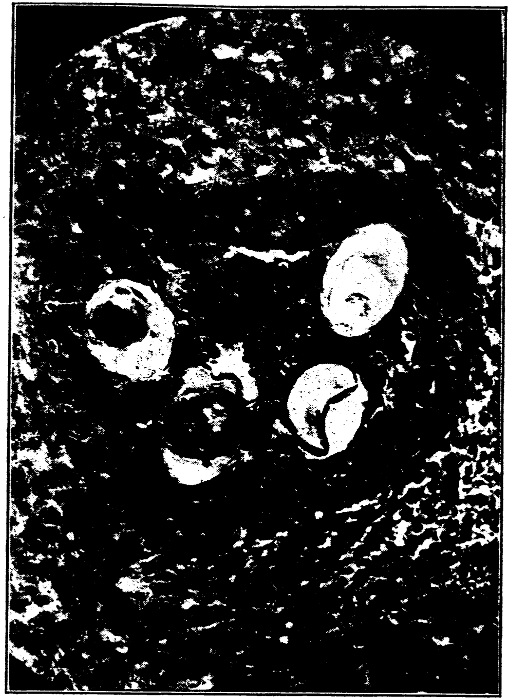

Fig. 4 (× 400). Microphotograph showing a gland, impacted with eggs and the commencement of changes for the production of a pseudotubercle.

Courtesy : "The Imperial Council of Agricultural Research."

form an illuminating study, as they present a great resembance to the like structures encountered in Nasal Granuloma. In a notable contribution on the morbid histology of Onchocerciasis, Shafi Mohammad [1931] has made the suggestive statement:—"Giant cells here appear small and more compact and take various shapes, thus becoming *flattened or radiating* in close apposition to the cellular and fibrous elements around. This is due to the pressure of the growing fibrous tissues round them and also the counter pressure of the capsule of the tumours. Their protoplasm is not so eosinophilic as the above mentioned giant cells and their nuclei are pressed together into one or more solid masses and take the stain deeply."

In the different parts of the matrix of the growth, empty spaces of various shapes, rounded, oval, or spindle-shaped, are occasionally seen. These are presumably a kind of mould left by the eggs. The resemblance of the shapes to those of the actual ova discovered in the nasal discharges is worthy of note. The matrix reveals groups of embedded eggs or empty irregular capsular shrunken shells. Various stages of the embryo within the egg shell can be made out. Some appear to be fully developed, other show a distinct segmenting embryo whilst some egg shells are altogether collapsed and contain little or no organised material. Judging by the appearance, shrunken and blackened shells with dark amorphous content would appear to be eggs that have died-due to unfavourable conditions. Inside the shell of viable eggs, a distinct envelope (vitelline membrane) may be seen enclosing the embryo. Some ova contain cells staining at the periphery. while others show cells staining at the centre. In one ovum, at least, a fully matured, miracidium was seen still attached to the spiny portion of the egg shell (Pl. XI, fig. 2). In some sections, spaces which were originally occupied by the eggs are seen occupied by mature or immature miracidia, a few of which are seen as leaf-shaped bodies with an anterior cone, eosinophilic cephalic glands and a distinct constriction between the cephalic and caudal regions. Some miracidia were observed to have a blunt caudal extremity terminating abruptly, and these presumably were the females.

In deeper sections, many coiled mucous glands and large blood vessels are included. Some of the glands are apparently normal although containing some discharge. Others may show hyperæmia. The glandular epithelium quite frequently is noticed to undergo fatty degeneration and vacuolisation in many places. In two samples of histological tissue, the discharges in the nasal gland have been found to contain typical Bilharzia worms. Some glandular tubules were definitely impacted with clusters of ova (Pl. XII, fig. 4), which would appear very suitable to form the nucleus of "bilharzial pseudo-tubercles". It is difficult at times to say definitely whether a pseudo-tubercle was initially formed by the deposition of eggs in the tubules of nasal glands or within dilated capillaries or in the matrix of the connective tissue itself.

Apart from the changes in the connective tissue of the nose described above, the blood vessels show marked lesions in the shape of varying degrees of endarteritis, the lumen of some being altogether obliterated. The blood vessels in deeper sections are generally larger and contain mature healthy worms, either singly or *in copula* (Pl. XII, fig. 3, and may present considerable dilation and degrees of end-arteritis. As the worms in these vessels appear quite healthy and undegenerated, the changes in the endothelium and the wall of the vessels would appear to be due to bilharzial toxins. It is interesting to note that the lower margin of the field in a microphotograph (Fig. 2. Plate V) in Krishnamurti's [1925] Memoir shows what would appear to be a healthy Schistosome worm. Some blood vessels reveal a perivascular reaction. If the mature worm or embryo undergoes death or degeneration, the parasite remnants serve as the commencing nueleus for thrombus formation. With an attempt at organisation of the thrombus so formed, the lesion in the blood vessel involves the other coats as well and is not restricted to the endothelium alone. The stages in the formation of pseudotubercles, characterised by huge giant cells, eosinophiles and fibrosis as already described, are also seen in the case of a capillary vessel containing bilharzial elements—the affected vessel finally losing its identity' A certain number of vessels in the growth have been observed to have a disrupted wall resulting in hæmorrhage into the surrounding tissue. It is believed that by means of the spine of the egg and due to the histolytic substances elaborated by the enclosed larva and exuded through the egg shell, a way into the perivascular tissue is made. The ova probably find their way in this fashion into the extravascular tissue, although it seems possible that an occasional mature female may stray into the tissue outside the vascular system and sometimes lay the eggs *in situ.*

DISCUSSION.

Earlier in the paper it was stated that the view that Nasal Granuloma proper is a form of Schistosomiasis readily explains all the known facts regarding the condition. These facts may be summarised as follows :—

(*i*) Heavy accumulation of eosinophile cells in sections.

(*ii*) The occurrence of peculiar "actino" bodies or "clubs" as a reaction against parasitic capsular shells.

(*iii*) The superficial formation of characteristic small granulations without involvement of the tissues of the tongue and jaw, and the chronic nature of the lesions.

(*iv*) Enzootic nature of distribution.

(*v*) Failure of experimental transmission of the disease by contact, and by treatment with cultured Streptothrix or with diseased tissue.

(*vi*) Failure with Iodine treatment and almost specific response to Tartar Emetic.

With regard to the identity of the parasite, it has been stated that the "spindalis" type of egg has been seen in the tissue and in the nasal discharges of affected animals and the adult parasite also resembles *Schistosoma spindalis*, Montgomery, but unfortunately fully mature specimens have not yet been obtained so that a definite opinion on this point cannot yet be expressed. However, certain facts have come to light which suggest that it may be a new species. It is interesting for example, to note that Fairley and Makie [1926] conveyed infection of *Schistosoma spindalis* to buffaloes, which they believe to be the natural hosts of the parasite, but the buffalo appears to be strongly resistant to attack by the parasite of Nasal Granuloma.

Liston and Soparkar [1918] and other workers on *Schistosoma spindalis* infection mentioned above, have not encountered eggs of any other type than "Spindalis," although these workers have studied infection by this parasite in such animals as cattle, young goats, guinea pigs, buffalo and the monkey (*Macacus sinicus*). They have also stated that *Schistosoma spindalis* affects only the alimentary tract or its appendages and its ova are voided solely with the faeces.

Further investigation into the speeific identity of the parasite and its intermediate host, together with the reproduction of the disease, drug therapy, and prevention will be taken up as opportunities occur.

CONCLUSIONS.

A few cases of Rhinosporidiosis of cattle have been recorded in India, but Bovine Nasal Granuloma proper is a separate entity and is a Schistosomiasis.

Nasal Granuloma presents an altogether new localisation of Schistosomiasis, as compared with the hitherto known urinary and intestinal forms.

The parasite resembles *Schistosoma spindalis*, Montgomery, but certain differences which, are under study, have been observed.

The true nature of the "granules" previously described in this condition has been shown to be closely connected with the invading parasite, which sets up reactions, resulting in the formation of the so-called "follicles" and actino-bodies.

Examination of nasal discharges in caustic potash preparatonsi should be of great value in the diagnosis of the disease in future.

With the definite information now available regarding the etiology of this condition, further experiments with the intravenous administration of such drugs as Tartar Emetin, Antimosan, etc.. are indicated.

Acknowledgments. My thanks are due to Mr. G. D. Bhalerao, M.Sc., Helminthologist at this Institute, for giving me the value of his expert opinion and confirming my findings with regard to the parasitic elements discovered.

In conclusion, I take this opportunity of placing on record my great indebtedness to Mr. F. Ware, F.R.C.V.S., I.V.S., the Director of this Institute, for his keen interest and helpful encouragement and for affording me all facilities, without which the present investigation would not have been possible,

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Anatomical Section.

SOME PECULIAR ANATOMICAL FINDINGS IN THE HORSE.

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(Continued from page 12, No 1, Vol. IX.)

4. *Anastamosis of the Pre-humeral artery with a branch of one of the largest muscular branches of the Brachial artery.*—In all the subjects (horse) that were dissected all these years, the pre-humeral artery did not show any deviation in its course and distribution except in one subject. In the left fore of this subject that was dissected on 7-10-25, this pre-humeral artery was found to be extremely slender and one of the largest muscular branches which was intended for the biceps and which was detached from the brachial artery at the inferior third of the humerus, divided into two branches; one of these spent itself in the biceps at its inferior part while the other branch went up and anastamosed with the extremely slender pre-humeral. (Plate IV.)

Note:—The pre-humeral artery of the right fore limb of this subject was normal.

5. *Variation in the number of branches of the Deep Humeral artery.*—This branch—the deep humeral artery, is given off from the brachial artery either a little below or almost at the same level as the pre-humeral artery and after a short course backwards usually divides into four branches and supplies the three heads of the triceps extensor cubiti and scapulo-ulnaris. (Plate V-A.)

This deep humeral artery in the left fore of three subjects (horse) dissected on 7-10-25, 9-9-26, and 15-10-30 and in the right fore of the subject dissected on 25-10-29, instead of dividing into four usual branches divided only into three. (Plate V-B). Perhaps to compensate the want of the fourth branch, a branch nearly as large as the deep humeral was found coming off from the brachial artery about an inch below the deep humeral. (Plate V-C). This additional branch was found spending itself purely in the caput magnum (long head) and caput parvum (medial head).

6. *Peculiar origin of the Ulnar artery.*—The ulnar artery usually comes off as a branch of the brachial artery arising from its posterior face and that just above the elbow joint at the lower border of the caput parvum (medial head of the triceps). This condition has been uniformly found in all the subjects but in the left fore of the subject that I dissected on 7—1—25, this ulnar artery was found to be a branch of the anterior radial artery instead of being a branch of the brachial artery and that marking its lower limit. (Plate VI.)

The ulnar artery of the right fore limb of this subject did not show this deviation in its origin.

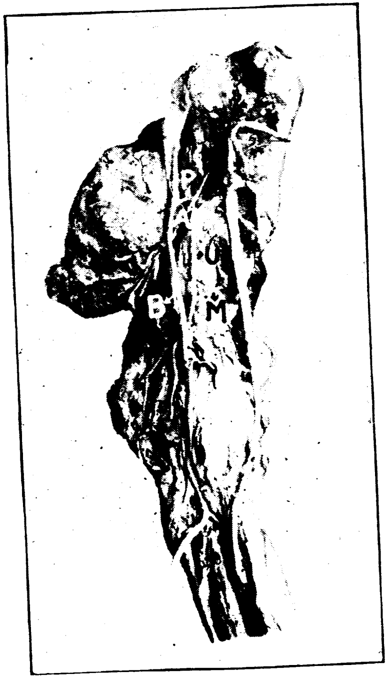
7. *Variation in the number of branches of the large metacarpal artery* :—

(*a*) *Want of a lower branch of the large metacarpal artery,*—Large metacarpal artery usually gives off two unnamed branches and the first branch which is given off at the origin of the large metacarpal artery, joins the ulnar artery to form the supra-carpal arche while the second branch which is given off a little before the bifurcation of the large metacarpal artery into two digital arteries, branches. These branches of the second branch ascend to anastomose with the two anterior and two posterior interosseous metacarpal arteries.

The second branch of the large metacarpal artery of both fore limbs in the subjects dissected on 14-10-26, 21-10-26, 23-9-26 and 25-9-29, was wanting. A branch from the external digital artery went up (Plate VII) and branched in its turn. These branches ascended to anastomose with the two anterior and two posterior interosseous metacarpal arteries. It is therefore seen that in these four subjects that the want of the second unnamed branch was compensated for by this additional branch (of the external digital arteries) which behaved in a manner similar to the second unnamed branch of the large metacarpal artery.

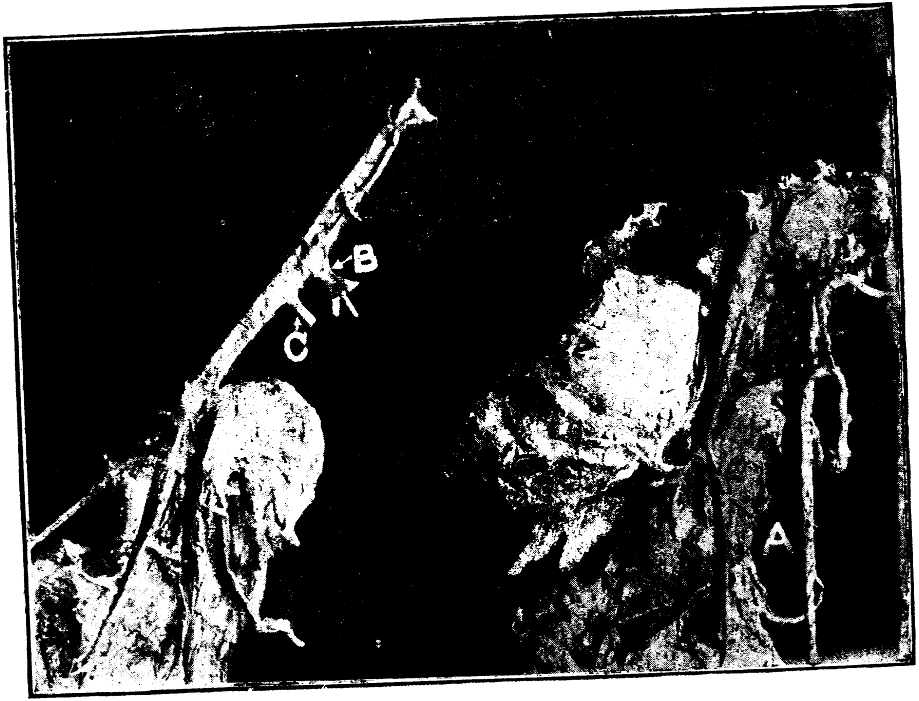
(*b*) ***An additional branch of the large metacarpal artery.***—Though only two unnamed branches of the large metacarpal artery were noticed usually in almost all the other subjects (with the exception of the four cases described in 7 (a) yet in the left fore of one subject dissected on 7-10-25, a third branch was noticed coming off from the large metacarpal artery in its course above the level of the the lower part of the upper third of the large metacarpal bone. (Plate VIII.)

Plate No. IV.



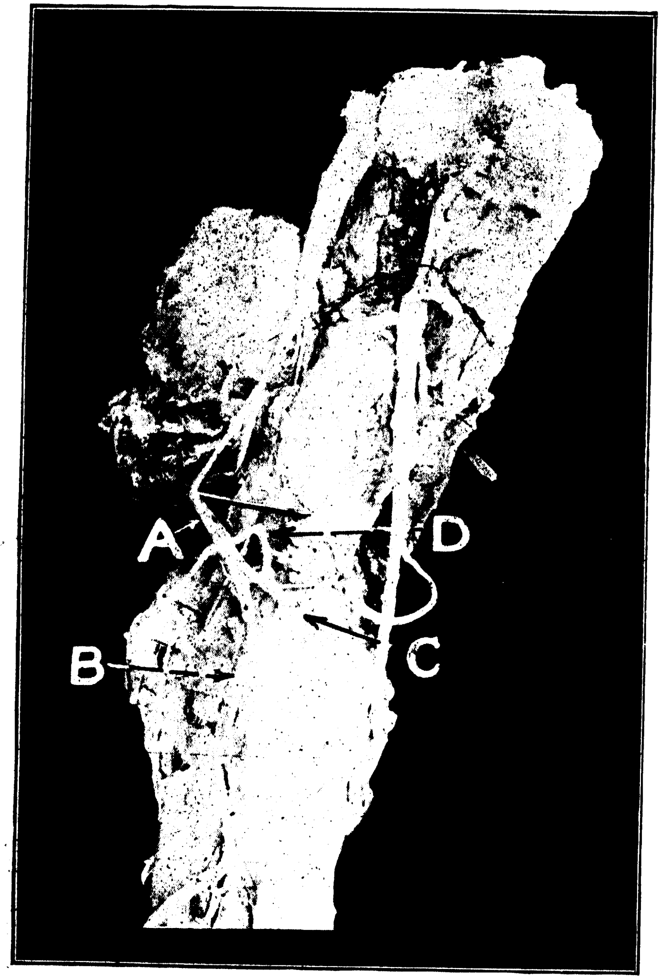
(B) Brachial artery: P. Prehumeral artery
M. Largest muscular branch to biceps.
U. Branch of M going up to P. (A) Anastamosis of U & P.

Plate No. V.



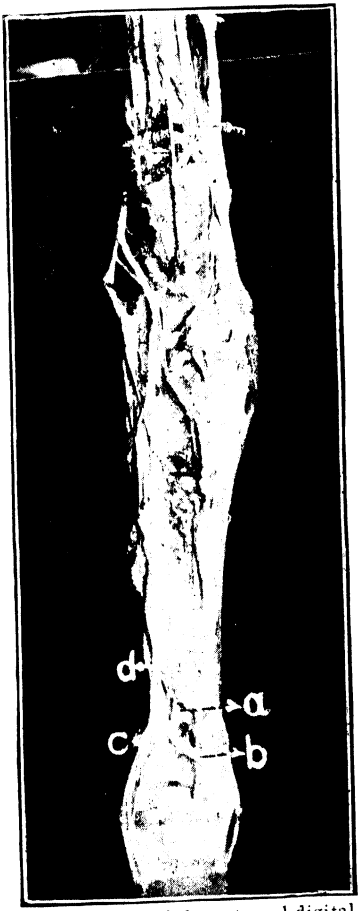
(A) Normal deep humeral artery.
(B) Deep humeral dividing into three branches.
(C) The compensatory branch.

Plate No. VI.



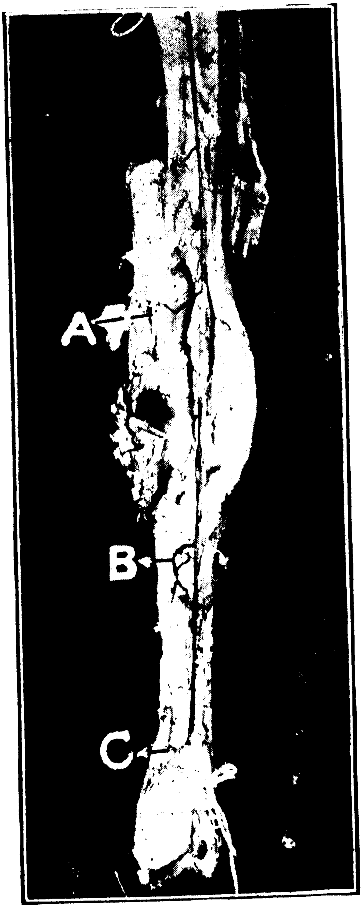
(A) Brachial artery.
(B) Posterior radial artery.
(C) Anterior radial artery.
(D) Ulnar artery arising from C.

Plate No. VII.



(*a*) A branch of the external digital.
(*b*) External digital artery.
(*c*) Internal digital artery.
(*d*) Large metacarpal artery.

Plate No. VIII.



(*A*) & (*C*) The usual upper and lower branches, respectively of the large metacarpal artery.

(*B*) The third stout branch.

General Articles.

AN INVESTIGATION INTO THE CONTROL OF FASCIOLIASIS IN CATTLE.

CARRIED OUT BY
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I. INTRODUCTORY.

In view of severe mortality reported of late years amongst cattle from the Almora district of the United Provinces, a hilly tract in the lower Himalayas, due to Fascioliasis which caused heavy losses to stock-owners, a primary inquiry was instituted by the Civil Veterinary Department, United Provinces, in collaboration with the Imperial Institute of Veterinary Research, Muktesar, to investigate the intermediary host responsible for dissemination of the infection and to adopt suitable remedial measures, both prophylactic and curative and to control the disease. Investigations carried out last year into the life history of the intermediary host by the Helminthologist of the institute have not yet been completed. During the monsoons of the present year further work in this connection has been taken up and the results will be made known in due course. However, as a result of preliminary investigation it was ascertained that the infection was due to *Fasciola Gigantica.*

This paper deals mainly with the remedial measures so far as they have been applied in the experiment under report.

II. REMEDIAL MEASURES.

(1) Use of Danistol.

(a) *Administration of the drug* :—The Director of the Imperial Institute of Veterinary Research, Muktesar, placed at the disposal of the Civil Veterinary Department, United Provinces, 740 sealed capsules each containing one gramme of Danistol which was administered to 34 head of cattle in November, 1931. In order to test the efficacy of the drug an equal number of infected animals was kept as controls. The drug was administered on an empty stomach in the morning before first feed for four consecutive days at the rate of three grammes for an animal upto 250 lbs. body weight and for every additional 100 lbs. 1·5 grammes more were added.

(b) *Effect of Danistol* :—Out of 34 animals kept as controls 33, *i.e.*, 97·1 percent died during the cold weather from November to March while the remaining one, i.e., 2·9 percent was found alive but in poor condition with typical swelling under the jaw. Out of 34 animals which received Danistol 3, i.e., 8·8 percent died during, or soon after the course of treatment while the remaining 31 animals, i.e., 91·2 percent were found alive and most of them in good condition. In many of the treated animals striking improvement in their general health was noticed within a few days after the administration of the drug.

(c) *Toxicity of Danistol* :—With the exception of some cases of a temporary loss of appetite and slight diarrhoea no adverse effects on the general condition of the treated animals were observed. Within a few days the appetite was regained and diarrhoea ceased. The three treated animals which died were more or less in a cachectic condition when treatment was started and were presumably heavily infested with liver flukes. Post-mortem examination of one of them revealed the presence of numerous dead flukes mostly in a degenerated and emulsified state. Unfortunately the carcases of the other two animals could not be had for post-mortem examination as the owners had thrown them down the *Khud* (hill side). Death of these animals is considered to be due to the toxic effects caused by the sudden destruction of the flukes and to absorption of products of their decomposition in the bile ducts. Leeb (1926) has shown that dried flukes contain albumen (63 percent.), fat (10 percent.) Glycogen (20 percent) as well as numerous proteolytic and glycolytic ferments, that injections of acqueous extracts of dried flukes or of their excretions or secretions provoke symptoms identical with those of distomatosis and that the harmful properties due to mechanical inflammation of the bile ducts are less important than those provoked by the products of metabolism or which result from the decomposition of dead flukes.

(d) *Cost of treatnent with Danistol* :—Approximate cost of a full course of 4 days treatment with the drug amounts to Rs. 14 per animal.

(2) Use of Carbon Tetrachloride in Cattle.

Considering the low value of cattle in this part of the country the high cost of Danistol stands in its way for its use for mass treatment of cattle in an infected area especially during these days of agricultural depression when there is need of an in-expensive but, at the same time, a highly efficient mode of treatment. Hence this opportunity was availed of to try the use of Carbon Tetrachloride—a drug which is much cheaper and possessess excellent anthelmintic properties but is nevertheless reputed to be unaccountably toxic.

(a) *Administration of first dose of Carbon Tetrachloride* :—In the latter part of March of the present year the drug was administered to 120 animals comprising 28 buffaloes, 42 bullocks, 36 cows, 11 young stock (cattle) and 3 goats. The cows and bullocks received a dose of 5 c.c. each, buffaloes 6 to 10 c.c. according to weight, young stock proportionately less from 1 to 4 c.c. and goats 1 c.c. in gelatenous capsules followed by a saline solution of magnesium sulphus excepting animals showing symptoms of diarrhoea.

(b) *Toxicity of Carbon Tetrachloride observed after first dosage*:—As a result of doing with the drug almost all the animals became ill exhibiting alarming symptoms of drowsiness, prostration, incoordination of muscular action, refusal of food, decreased yield of milk supply and in a few cases passing of blood stained faeces. Pregnant animals did not show any other ill effects. One buffalo died of acute poisoning about 10 hours after the administration of the drug and on post-mortem examination revealed the presence of numerous dead flukes together with a few amphistomes in the bile ducts. The latter were also found in the rumen. Two buffaloes and three cows died between a period of 2 to 3 weeks after the dosage probably due also to combined factors of general debility, irrepairable damage caused to the liver by the flukes end possibly nutritional defects. One calf died about 1½ months after dosage : this appears to be due to parasites which at the time of dosage being immature might have escaped destruction. So the figure of mortality comes to 7 out of 120 animals treated, i.e., 5·8 per cent. This, of course, includes the animal which died of acute poisoning directly after dosage and the percentage for it is 0.8.

(c) *Curative effects of Carbon Tetrachloride observed 2 months after first dosage* :—Ninety nine animals i.e., 82·5 per cent. were found to have been beneficially effected by the use of 1st dosage of the drug. Three of the treated animals met accidental death which in no way could be connected with the use of the drug, (2 fell down the *Khud* and the other trampled to death). Eleven, i.e., 9·2 per cent. were found not to have shown any improvement in their general condition. Out of these 2, i. e., 1·7 per cent had the appearance of swelling under the jaw and a few had diarrhoea as well. It is noteworthy that with the exception of these two animals none of the others, whether found in good or poor condition after 1st dosage, showed return of swelling under the jaw. It would not be out of place to mention that the eleven animals which showed no improvement might concurrently be suffering from other parasitic, protozoon or nutritional diseases. These experiments were conducted under ordinary field conditions and no claims are made to elaborate details which are only practicable in a laboratory.

(d) *Administration of second dose of Carbon Tetrachloride:*—The drug is known to have no parasiticidal effect on immature forms of the parasites to parenchyma of the liver (Veterinary Record VII, 679). As these immature forms become mature and lay eggs in about 4 weeks a further dosage was considered necessary to destroy them. Accordingly it was thought advisable to administer a second dose two months after the first. This time the drug was mixed with the saline solution of magnesium sulphate instead of being given in capsules.

(e) *Toxicity observed after the second dose of Carbon Tetrachloride:*—One cow which was able to withstand tolerably the first dose of 5 c.c. showed much reduced tolerance to the drug of the same dosage at the second administration and died within 24 hours. Post-mortem examination, six hours after death, revealed the presence of a few dead flukes and the liver appeared to be not very appreciably enlarged or cirrhosed. The work of Jones and Montgomerie (1928) had also indicated that, cattle tolerate the drug more poorly on redosage and may still even show a lower tolerance if treated a third time.

In view of the severity of toxic symptoms exhibited by the treated animals after the first dose, the rate of second dose was reduced, in many cases, from 5 c.c. for hill bull or cow and 10 c.c. for hill buffalo to 4 and 8 c.c. respectively. But toxic symptoms were again observed in majority of cases. It was very astonishing to note that a dose of the drug which did not produce very appreciable toxic symptoms in one animal produced severe toxic symptoms in another of equal age and weight, thereby showing without any doubt that the drug is most uncertain in its effects so far as cattle of these parts of the province are concerned. This finding is in confirmation of the view so often expressed by various workers abroad with regard to the effects of this drug in cattle. Toxic symptoms were noticed by Norris (1927) by giving so small a dose as 2 c.c. in cattle. Jones and Montgomerie (1928) administered 5 c.c. in yearling and 5 to 10 c.c. to cattle rising 2 years but did not find toxic symptoms. It is said that toxicity is closely related to calcium deficiency in the blood of treated animals. There is preponderance of opinion to show that cattle on pasture have much more tolerance to larger doses; but this view is difficult to reconcile to the fact that, in the experiment under report, the cattle were living almost wholly in hilly pastures.

(f) *Curative effects observed 2 months after the administration of second dosage of Carbon Tetrachloride:*—During the period of two months following the administration of second dosage of the the drug no death from the disease was reported amongst the treated animals which were, on the other hand, found to have made marked improvement in their general health. It may be mentioned that owing to monsoons green grasses and fodder are available in abundance and the health of cattle is generally good in that season.

(g) *Cost of treatment with Carbon Tetrachloride* :—In the first dosage the drug was administered in capsules followed by saline solution of magnesium sulphate. This works out an approximate cost of Re. 0-2-6 per dose. In subsequent doses it was administered mixed in saline solution of magnesium sulphate deleting the cost of capsules and consequently approximate cost of one dose comes to Re. 0-1-6 when the cost of magnesim sulphate is calculated at Re. 0-2-0 per lb. The observations have proved that the mode of administration of the drug is just as efficacious. It has now become a routine method.

(3) Other prophylactic measures.

The following prophylactic measures were prescribed :—

(a) Demonstrations were given to the villagers to destroy snails and cercariae of liver flukes with light solution of copper sulphate (1 in 5 to 20 millions);

(b) Burial of carcases;

(c) Avoidance of wet pastures and water in known contaminated area.

(*d*) Avoidance of contamination of water by the faeces of infected animals;

(*e*) Administration of small quantities of salt daily;

(*f*) Maintenance of health of cattle with nutritious diet and observance of veterinary sanitary measures in general.

III. CONCLUSIONS.

Prophylactic measures directed against intermediary host and propagation of ova on pastures have their advantages but are, in many cases, not easily and effectively carried out in practice in the field conditions obtaining in the hills particularly, and their employment does not do away with the necessity of medicinal measures which are obviously more practicable. Danistol is unquestionably much more efficacious and safer drug as compared with Carbon Tetrachloride. But its heavy cost rules it out in the wholesale treatment of cattle. Though Carbon tetrachloride produces uncertain effects attended with serious consequences which some times end in death it is decidedly a cheap and efficacious drug.

The beneficial effects noticed in the treated animals are encouraging enough to warrant its use for mass treatment in the absence of any other better and cheaper drug. As infestation is usually acquired by animals during and after rains, and as most of the deaths occur during cold weather, it would seem advisable to carry out wholesale treatment of cattle in the affected areas with this drug every month or two commencing from September to March.

Thanks are due to Mr. F. Ware, Director of the Imperial Institute of Veterinary Research, Muktesar, for his kindly offering Danistol free to carry out the first part of the experiments and also to Mr. G. D. Bhalerao, Helminthologist, for the great help given to us during the course of investigation.

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BACILLARY NECROSIS OR NECROTIC DERMATITIS IN HORSES.

BY

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Recently a number of cases of Necrotic Dermatitis attracted the notice of the writer and this paper is the outcome of the observations done and it is hoped it will be of some use to those interested in it.

Nature :—It is an acute inflammatory disease characterised by the formation of lesions on the extremities, usually around the coronet, with systemic disturbances due to Bacillus *necrophorus* in combination with other pathogenic organisms.

Bacteriology and infection :—Organism responsible for the disease is called Bacillus *necrophorus.* It produces many other gangrenous and inflammatory diseases about which no discussion is entered into in this paper.

The bacillus occurs in the soil in infected localities and frequently enters the tissues, particularly the lower extremities, through small wounds, abrasions, etc. The organisms are generally found mixed with other pathogenic organisms such as Streptococcus and Staphylococcus, etc. The bacilli stain well with Methylene blue (Loeffler) and dilute Carbolfuchsin. They grow at the ordinary incubation temperature i.e. 37°C in suitable media. But the isolation of the organisms is difficult as it is mixed up with many other organisms. The isolation may be done by inoculation, preferably in rabbits. It is an anerobic, non-motile and gram negative bacillus. It does not form spores.

Idle horses kept in closed, dirty and moist stables are more susceptible than the working horses kept in clean, well ventilated dry stables. I know a stable near Calcutta having idle horses, where a number of them died of this disease.

Symptoms :—The disease may occur in a mild form as to escape notice or it may be so severe as to cause death in the animals affected. Most of the acute cases are infected with other pathogenic organisms as well, of which Streptococci are the more important ones. The writer has seen some cases which had lesions simulating chronic lymphangitis and arthritis, which perhaps is due to the secondary infection of Streptococcus. At the onset of this diease, in the acute form, there is high fever 103°F to 105°F and great pain in the affected part or parts. Swellings or exudations are not usually seen at the outset, but within a couple of days these symptoms may appear, generally, at the anterior part of the coronets or in the heels. Some cases apparently appear like those of acute laminitis at first (until swelling or sloughing of the coronet appears.) In favourable cases the swelling terminates as an abscess locally and it may burst discharging foetid pus, when the temperature falls down within a week, and when proper care is taken, the wound may heal up within a fortnight. Sometimes the whole coronet is affected, slight discharge may be seen from the defused swelling, and if such cases are neglected they die within two or three weeks. In bad cases when the acute symptoms subside there may be present lymphangitis or arthritis or sometimes both.

Treatment :—The following treatment was found to be good by the writer :—

At first a foot-bath was given with warm water, in which some bleaching powder and boric acid in equal proportions were added. This also helps in sterilising the wound or abrasion in the foot. The foot-bath should be given atleast for an hour, then bandage the part with some dry dressings. This bath and dressing should be repeated twice or thrice daily. Internally small doses of Mag. Sulph and Pot. Nitrate should be given until the acute symptoms subside. Within a week most of the cases take a favourable turn, the temperature falls down, swelling and pain subsides and there is formation of an abscess which bursts or can be opened. Then dress it as an ordinary wound with antiseptics or better still with Tincture of Iodine for 1 or 2 days and later with some dry dressings. If lymphangitis or arthritis be present, the case improves when injected with Streptococcal Vaccine. The Vaccine should be repeated every third or fourth day starting with 200 Million to 2000 Million or even more.

It is difficult to say what preventive measures are to be adopted excepting to keep the stables &c., clean and to attend to wounds &c.,

without loss of time. The horse once attacked has been observed liable to get similar attacks later; one horse with four attacks, invariably involving the same limb, has been observed.

Experience of other Veterinary Surgeons is solicited regarding the treatment &c. of such cases, through the columns of this journal.

CARE OF DOGS IN HEALTH AND DISEASE

BY

MR. G. S. BANERJEE, G.B.V.C.,

House-Surgeon, Dog Ward, Bengal Veterinary College.

Veterinarians are frequently called upon to give necessary advice to the dog owners as to how to take proper care of dogs in a tropical country like India. As a matter of fact there are certain points which are very essential for the management of healthy dogs and the negligence of which frequently brings about illness in them and causes much trouble to their masters. We should always remember the old proverb 'Prevention is better than cure' and act accordingly. In this article I shall try to deal with some general principles as to how to take proper care of dogs in this country.

Feeding of the healthy dogs :—Feeding of the dogs is one of the most important factors as many dogs suffer from bowel disorder and die prematurely due to improper feeding. Although from the biological point of view, dogs are classified with the carnivora, like men they are omnivora, being accustomed when domesticated to get their food according to environment, such as, some dogs live on meat diet, some on vegetable diet, some on milk diet, some on fish diet and so on. Diets also vary according to breed and habits of the animal. Above all meat is the ideal one and best suited for their stomach. The digestion of the dog is slow and it takes twelve hours to digest. In view of the above facts it is advisable to give meat once a day, in one meal. Raw meat is always preferable to cooked meat, being more easily digestible. Conjoined with regular feeding, supply of pure and fresh water is very important. Food should be changed from time to time as loss of appetite, constipation and digestive disturbances are often due to monotonous diet. Care should always be taken that they do not get pestries and table food as these are likely to cause indigestion and loss of appetite &c. Overfeeding is as bad as underfeeding. Occasional fasting is necessary for proper digestion by giving rest to the digestive organs and is also a good appetiser. In health, dogs should get their food twice a day at regular hours both morning and evening. In the morning—light food like milk, lactol, butter milk, barley water, raw eggs, oat meal, biscuits etc., should be given. In the evening, raw meat, minced meat, meatscrap, tripes liver, sheep's head, vitaminous vegetables, rice, bread, biscuit, chappati etc., should be given.

Feeding of the sick dogs :—Regarding the question of the feeding of the sick dogs we should always remember that forced feeding of heavy nitrogenous diets is very injudicious, as it is the natural instinct for the sick dogs not to take any food when they are unwell. But in most cases they begin to take their food within a few days time. It has also been noticed that dogs are tempted to lap milk by first giving the milk inside the mouth with the finger. Nutritious food forcibly given causes bowel disorders and their strength is more spent for the digestion than for resistence of diseases and thereby they run from bad to worse state of health. Food voluntarily taken is likely to be digested and assimilated properly. Light and easily digestable food like milk, butter milk, whey, barley water, horlicks, malted milk, Brands essence of chicken, white of egg etc., are considered to be the best diet for the sick dogs. Little feeding at shorter intervals and variation of palatable diets should never be forgotton.

Feeding of the puppies :—Little feeding and often is the rule to apply to very young puppies increasing the interval as they grow old and begin to take more substantial food. Diluted cow's milk is considered to be the best for the puppies not over a week old. It is half milk and half water. After being boiled for two or three minutes a small amount of cane sugar is added. The concentration should be increased as the puppy grows older gradually, lactol, butter milk, milk, barley water, oat milk, minced meat etc., may be given and also for the formation of good bone and constitution, Codliver oil kalzana, Radiostall, vitaminous vegetable, Collosal Calcium cum vitamin D may be given in food which will give very satisfactory result, Bones and joints are very useful for the puppies to chew as they help in digestion and strengthening the teeth, occasional worming is very useful for these puppies because without this they get various kinds of troubles. The puppies [should be kept always clean and plentiful of exercise should be given and they should not be chained up all along as they prefer freedom.

Bathing :—All healthy dogs should be bathed twice a week in summer and in winter once a month, but the animal should be kept clean by brushing and combing etc., and may be sponged occasionally. No irritating soap like carbolic soap should be used for healthy dogs for bathing. Coronolium dog soap, margo soap, soapex, kurmange, neko soap are considered best for dogs, in this tropical country. Occasional bathing with potassium sulphurata prevents the dog from ticks, fleas and skin trouble. Dogs should be well dried up after bath.

Ticks and Fleas :—Ticks are one of the most dreadful parasites and they cause a great havoc in dogs in Bengal. Many dogs lose their lives prematurely from tick fever in Calcutta. Ticks can live without food for some months and when a dog is attacked with ticks, it is very difficult to get rid of them. Keep a careful eye on them and pick up with a pair of forceps and dip the parasites in the strong phenyle lotion and give the affected dog bath with Soapex, Kurmange and rub pulvex which will help the dog from this trouble. Washing the floor etc., with kerosene oil will prevent from tick rush. Fleas are also very common in dogs and they are best prevented with the use of keating powder which should be brushed afterwards. Pulvex also is very good.

Ear, nose and eyes :—Careful examination and necessary attention also should be given to these organs, as these organs are very frequently affected and remain unnoticed. Ear should be occasionally cleaned with hydrogen peroxide or æther and if the ear is moist dusting powder is to be applied in the ear which will keep the ear dry and healthy and prevent otorrhoea, canker etc. Nose being the first organ of the respiratory system, always requires special attention, because dust, foreign bodies, microbes etc., pass into the lungs through the nose and cause many troubles. Occasional application of eucalypted vaseline act as disinfectant and keep the nose smooth and soft and prevent any crack. Running from the eyes is very common in summer as a result of irritation due to heat or dust. It is also noticed in other diseases. The eyes are kept very cool and such running can be prevented if eyes are washed every day with raw, pure and cold milk soaked in cotton wool.

Mouth :—Occasional cleaning of the mouth, gum and teeth is very important as many dogs suffer from pyorrhoea, foul smell, tartar and ulceration of the gum etc., which remain unnoticed and thereby become worse and create troubles. Occasional cleaning of the mouth and teeth with condys fluid, electrolytic chlorine in weak lotion, listerine, hydrogen peroxide and alum lotion is very useful and it helps in digestion, keeps the teeth clean and stronger and prevents decay.

Anus :—Careful examination of this part of the body is also very important. Dogs generally rub their anus on the ground due to sensation caused by the intestinal parasites and some times they suffer very badly from suppuration of the anal gland and if it is not immediately attended to the animal is sure to suffer from many troubles. The suppurated gland should be squeezed out, boric compress to be applied once a day and boro-glycerine to be applied inside the anus with the help of the finger and a dose of worm mixture or a purgative should be given immediately.

Exercise :—It is now generally known that plentiful of exercise is always necessary to keep up the spirit of all the healthy dogs. Sick dogs should get also exercise because when they play they generally forget about their ailments which helps very much to recover early from the disease. But over-exercise makes them much exhausted. There are also several classes of dogs with their characteristic spirit which should be encouraged to keep up their spirit.

PREVENTIVE INOCULATION AGAINST BLACK-QUARTER BY AGGRESSIN ALONE METHOD.

BY

P. SADASIVA BHAT, G.M.V.C.,

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The prevention and control of Cattle Diseases such as Rinderpest, Black-quarter, Haemorrhagic Septicaemia, etc., is the chief object in view of the Veterinary Departments in the different provinces, and research work in this direction is being done by different workers, with a view to arrive at a decisive means to combat such diseases. Specific sera and vaccines are produced to overcome the diseases. Sera and Vaccines have been produced against Rinderpest, Haemorrhagic Septicaemia, Anthrax, etc. But all such sera are specifically known to produce a transient passive immunity extending from a few days to a few weeks and inoculations are being resorted to, in all such cases when the disease recurs after a short time. The result is a considerably large quantity of serum has to be used up at an enormous cost. Even in the case of Serum-simultaneous inoculation against Rinderpest, the period of immunity is said to be " lasting " which term is not encouraging in itself in field conditions. Major Stirling's Goat-virus alone inoculation method is a great promise which if stabilised (we wish the worker all hearty success), anti-serum which is being prepared at a large expense can be dispensed with.

Now, taking up Black-quarter as one item, it is well known to the profession that this disease is being fought out with Anti-serum alone or with Sero-Aggressin method. Serum alone method is said to give immunity only for 9 days, whereas Sero-Aggressin is believed to produce a longer duration of immunity, with no definite data, whereas Aggressin alone is believed to produce immunity which lasts for a year. Serum alone method and Sero-Aggressin method are said to be the safest and are the only methods practised in field conditions. Whereas it is elsewhere said that Aggressin alone is to be resorted to " on young animals, about a month before the onset of season when cases are known to occur, in doses of 5 to 10 c.c. per head of cattle and 1 to 2 c.c. per head of sheep ". At the same time the objection to the Aggressin alone method in actual outbreak (when deaths occur almost daily) is that animals so injected are more prone to infection. In this connection, I hold the view that if it is so, why not the same objection hold good in cases of human cholera outbreaks? Whereas preventive inoculations on human-beings during cholera epidemics with vaccine is extensively practiced with a determined effect. Whereas cholera vaccine is a product of the attenuated vibrios of cholera, *B. Q. aggressin is only a Bacterial Filtrate.* Reactions in either cases occur anywhere from 1 to 2 days, and immunity is produced in about 3 to 5 days or in other words after the reactions subside. Observations on Anti-cholera inoculations have revealed that inoculated persons were still susceptible to attack till the reaction subsided; hence the concerned authorities give advise to resort to hot food and drinks and to observe other fundamentals of cleanliness and hygiene. The result being, untoward effects, are negligibly few; whereas B. Q. Aggressin which is only a bacterial filtrate, cannot produce or cause disease even if the defensive mechanism of the body is low. Natural conditions are still more favourable to us, in that, if the inoculated animals are so managed as not to allow them to graze on infected pastures, which are difficult to be located, chances of attacks should be negligible.

In conclusion, I opine that if this method (Aggressin alone) be practised in actual outbreaks, a definite period of immunity with little cost, can be achieved with advantage, and I earnestly solicit the views of the members of the veterinary profession through the medium of the Indian Veterinary Journal.

Clinical Articles.

LONGITUDINAL FRACTURE OF SCAPULA IN AN ARAB RACE MARE.

BY

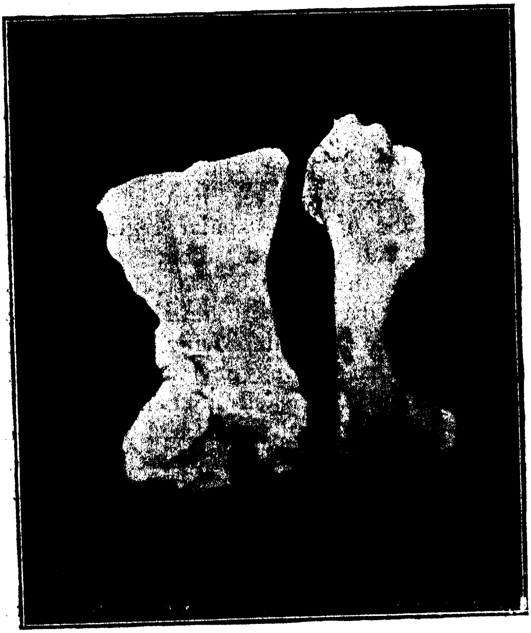
M. MOHEY DEEN, M.R.C.V.S.,

Professor of Surgery, Bombay Veterinary College.

An Arab race mare 'Sarkha' was admitted to the College Hospital on 10th February 1932, with the history that on 6th February, during the race, the animal while taking a turn at a bend on the right side stopped all of a sudden and fell down. It was dead lame on near fore and was taken to the owner's stables where it remained for four days and then brought to the Bai Sakarbai Dinshaw Petit Hospital for Animals for treatment on 10th February 1932.

The owner suspected rupture of the flexor tendons near fore. On examining, the tendons were found to be slightly sprained but the severity of lameness was out of proportion to the sprain of the tendons. The animal was unable to put weight on near fore. The limb was greatly swollen and the shoulder region was oedematous. The swelling extended upto the knee though it was not great as at the shoulder neither it was oedematous.

Moreover the part being painful, manipulation could not be carried out satisfactorily. The animal was put in slings and belladona pigment applied over the region of the shoulder, chest and fore arm. In the absence of crepitus it was suspected to be a case of severe sprain of the shoulder.



Next day the animal seemed to be in great pain and exhausted, so much so, that it would not rest in the sling properly, but was swinging in it. The sling was let loose and the animal allowed to stand. It was noticed to be resting on its near toe, the point of elbow was dropped and the knee joint flexed. It was a typical posture of radial paralysis. The swelling had considerably come down and the part was not very painful. Manipulation of scapula, humerus, radius and ulna did not reveal fracture of any of these bones; but when the limb was rotated inward and outward by an assistant crepitus was clearly heard on auscultating the shoulder region. On account of these symptoms it was diagnosed as a "fracture of first rib."

Because the animal could not stand on the slings constantly it was allowed to rest on the slings only for half an hour or an hour at a time and then let loose in the box.

The mare was given chloral hydrate and laxatives daily. On succeeding days the same treatment was followed and though the swelling was getting less every day, still the animal seemed to be in great pain and was constantly pointing towards the shoulder.

On 14th February 1932, the animal had temperature of 103°F. So it was given a febrifuge every day till the fever disappeared on 18th February.

On 15th February, the animal started putting weight on the affected limb without anybody giving support to the knee and by 18th February, she could move about on the affected limb as well, though with some difficulty.

The condition was improving every day and the result seemed to be quite flattering.

On 21st February, slight fever being present, febrifuges were administered till 29th, when the fever disappeared; but very hard swelling from the middle of the scapular region extending to the upper third of humerus still persisted. This swelling seemed to be subcutaneous in the sense that it was not attached to the bone. This persisted in spite of daily massage with liniments and absorbants.

The gait of the animal was improving every day, and at the time of moving the animal showed obvious signs of pain though manipulation of the part did not elicit any pain at all.

The animal used to be lying in the bed most of the time and was losing condition in spite of tonics and careful feeding.

About the middle of March, the animal seemad to be at ease and began moving about without showing any pain. All the same extension and flexion of the joint was restricted, and the indurated swelling did not show any tendency to decrease.

Eventually the mare was destroyed on the 30th of March 1932, at the request of the owner. On post-mortem, supraspinatus, infraspinatus, deltoid, and trapezius muscles were found to be indurated and on deeper dissection major portion of the muscles were found to be fibrosed and calsified, and some callus formations were left about the lower third of scapula, and the shoulder joint was very much enlarged and out of shape.

As it seemed impracticable to dissect the fibrosed and calcified muscles from the bones, humerus and scapula were detached from the body and allowed to mascerate. First rib was found intact and healthy which shows that the symptoms of radial paralysis were not due to fracture of the first rib.

When the bones were ready for examination the scapula was found to be longitudinally fractured, the fracture extending from the lower third of the bone into the glenoid cavity and dividing this cavity into five parts. Though the accident occurred nearly two months ago the fractured edges did not unite and callus formation on the bones was of the nature of rarifying ostitis. There was no anchylosis or an appreciable corrosion of the head of humerus, though there was callus formation on the neck of humerus and scapula.

Conclusion.—The fracture seems to have taken place as a result of excessive muscular contraction. To interpret the symptoms of radial paralysis is very difficult and sometimes misleading.

It is remarkable that, in spite of extensive fracture no anchylosis occurred and considering the extent of lesions the movements were not very much impaired. Severe sprain of muscles can easily lead to their fibrous degeneration and even calcification.

QUACKERY AND ITS CRUELTY.

BY

P. VEDA BHAT, G.M.V.C.,

Veterinary Assistant Surgeon, Government Veterinary Hospital, Bangalore.

A she-buffalo was brought to the hospital on 17-1-32, for the treatment of eversion of the uterus and was admitted as an in-patient.

History of the animal as narrated by the owner:—The animal had a natural calving on the night of the 13th January 1932. After the shedding of the placenta the next morning, the owner noticed a fleshy mass of deep red colour protruding between the lips of the vulva. The animal was constantly straining and was restless. On further question, he said that none was allowed to meddle with the animal nor did anybody attempt to treat it.

The Animal showed the following symptoms:—Violent straining, restlessness, unwilling to move and falling down when forced to walk; unable to rise without help. On examination a portion of the uterus was found protruding with a foul discharge dribbling from it.

Treatment:—The part was first irrigated with cold water and carefully cleaned with Condy's fluid. After elevating the hind quarters the uterus was gently pushed inside by the fist of the right hand, until the part was set back to its original place. The uterus was then slowly douched with luke warm Condy's fluid. During the process, I felt inside the uterus, something hard and I cautiously drew it out and to my surprise found it to be a circular ring of hay coiled all round with cocoanut fibre. It was 7 inches in diameter and 2 inches in thickness as seen in the photograph.

The uterus was dressed with the following :—

℞

Boric Acid	... 30	gr.
Iodoform.	... 15	gr.
Alum.	... 1	dr.
Ext. Belladona	... ½	,,
Oleum Eucalpytus	... ½	,,
Glycerine	... 1	oz.
Olive oil	... 4	,,

m. f. t. dressing.

Hot fomentations were applied to the loins. The animal was kept raised on her hind quarters and was not allowed to move. Internally a dose of Chloral (one ounce) was also administered. In the evening as the animal showed straining, the dose of Chloral was again repeated and the fomentations and dressing continued. With this treatment straining was very much less, and the animal was given a mixture consisting of a full dose of Mag. Sulph and Nuxvomica. On the 6th day the animal was allowed to attend as an out-patient and at the end of a week's treatment it was discharged cured.

COMMENT ON GLYCERINE AND ITS USES IN SURGERY.

By

P. N. KAK, L.V.P., (HONS.).

B. G. Cavalry, Srinagar.

I came across an article on the uses of Glycerine in Surgery in *Veterinary Record* page 486 of April 1932. For nearly 4 months I gave a very extensive trial to this agent in my daily surgical practice avoiding as far as possible other antiseptic dressings. I arrived at the conclusion that Glycerine in the long run would prove a very very useful agent in the treatment of wounds, abscesses and fistulae in veterinary practice.

By the application of Glycerine, Mr. Wood, claims that nature is assisted in healing in her own way. The growth of bacteria is retarded and there is profuse outpouring of serum which washes them away. I feel that the explanation of the action of Glycerine is very convincing.

For the information of my colleagues, I give below a few cases which I treated in this way :—

(1) *An Australian Mare,* with fistulous withers. The case was treated by ordinary dressings for a fairly long time after opening it. But on reading about Glycerine treatment, it was adopted. The treatment was continued for two weeks and the rapid healing was marvellous.

(2) *Cocker Spaniel bitch,* with a flap of skin of the leg torn and hanging due to an accident. The hairs were clipped, the wound was given a wash with warm water and Glycerine was smeared over the entire surface. The detached flap was then sutured. Glycerine dressings were continued and the wound healed within 9 days.

(3) *A Chestnut Australian Mare,* with a wound an inch and a half deep over the shoulder caused by a nail peg. The area around was shaved and washed with warm water. Glycerine and warm water (1 in 4) was injected twice a day into the wound and it healed in two weeks.

(4) *A Spaniel Bitch*—with an open inter-digital cyst. The same line of treatment showed satisfactory healing in a week's time.

I would suggest to my colleagues to give a trial to this agent and record their observations.

AN OUTBREAK OF VERMINOUS BRONCHITIS IN SHEEP.*

BY

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A Baluch by caste came to the Wadia Veterinary Dispensary, Kandhakot, and reported the prevalence of disease in sheep. Accordingly I, in company with Veterinary Inspector Mr. Abdul Majid, proceeded to the scene of outbreak.

The owner stated that 52 sheep had died and the rest were suffering from cough. The sheep had been grazing on low lying pasture near the river Indus.

The surviving flock of 68 sheep was examined by us and the following symptoms were noticed:—General debility, severe cough, sneezing, mucous discharge tinged with blood from the nostrils and watery discharge from the eyes, diarrhoea, pendulous belly, appetite precarious and temperature abnormal.

A sheep was slaughtered and on autopsy the following lesions were found:—

Bunches and clusters of Strongylus Filaria in larynx, trachea and bronchial tubes. The mucous membrane of trachea was streaked with blood and at some places thickened. All other organs were in anaemic condition. A few Haemonocous contartus were also found in the fourth stomach.

The parasites were examined and identified to be Dictyocaulus Filaria (Strongylus Filaria). The phlegm was examined under microscope (low power) and millions of eggs and living embryos were seen. The disease was confirmed as Verminous Bronchitis and treated as under:—

℞

Oleum Terebinth.	... ʒi
Chloroform.	... mx
Tr. Opii.	... mxx
Glycerine.	... mxx
Acid Carbolic	... mx
Sweet oil	... ʒii

m ft. mist

This mixture was injected into each affected sheep intratracheally, and for parasites in the stomach, cupri sulph and mustard solution was given per mouth. Tonic powders were supplied. After a month the owner met me and informed that the treated animals were alright.

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* Read before the 1st Conference of Sind C.V.D., Subordinate Service Association, held at Jacobabad on 31st January, 1932.)

Thanks are due to Mr. Abdul Majid, Veterinary Inspector, who helped me in carrying out this treatment.

HYGROMA OF THE ELBOW OF AN ELEPHANT.

BY

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A male elephant belonging to Babu Lachman Kissore was admitted in the College Hospital as an in-door patient on 7-9-32. Height was about 10 ft. and age 40 years.

The elephant had an enlargement at the elbow of the near fore leg, about the size of a small water melon and the swelling being infected, gave rise to a purulent bursal fistula, leading to a fibroma ; it was painful to touch, the injury was reported to have been caused by a thorn which entered the skin while the animal was taken to a jungle.

Treatment adopted :—Hot antiseptic compress over the area twice a day and applying in the cavity Bin Iodide of Mercury Ointment 1-12, daily. This induced in a few days time the diseased tissue to slough off and subsequently the wound was packed with a gauze smeared with Iodoform Ointment. The animal was not allowed to lie down at night by chaining together the two forelegs. He made an uneventful recovery.

PARALYTIC RABIES IN AN ELEPHANT.

BY

B. RAMIAH, G.M.V.C.,

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I feel it my duty to report the following unusual case of paralytic rabies in an elephant which was bitten by a suspected rabid dog on 16-1-32. The case differs from the types mentioned by Evans in his book on elephants and I trust this will interest the members of the profession.

A cow elephant aged about 25 years attached to the establishment of the Assistant Superintendent of Police, Parvatipur, was bitten by a rabid dog on 16-1-32, on the trunk, left fore-limb, hind extremities and tail. The dog made its escape. The wounds ranged

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Photo taken by Mr. M. A. Hasan of H.E.H. the Nizam's C.V.D. Hyderabad, on Post-Graduate Training at the Bihar and Orissa Veterinary College.

from 1/8th of an inch to 1/4th of an inch in depth and were bleeding. The usual treatment of cautery was duly given immediately and I lost no time in procuring the anti-rabic vaccine. The animal was subjected to the treatment which was commenced on 24-1-32, and completed by 6-2-32. The injections were given in 60 c.c. doses in all places where the skin was loose and flabby, i.e., on the lower margins of the ribs, flanks, behind the elbows, and in front of the breast bone at the junction of the neck. The injections were followed by swellings—perchance reactionary—which took 4 to 7 days to come down. The bitten wounds healed without any trouble. The temperature of the animal during the period of vaccination ranged from 97°F in the mornings to 98·4°F in the evenings.

Till 26-2-32, the animal was perfectly normal in her habits and relished her usual fodder and ration. On 27-2-32, i.e., 43 days after the bite she developed sudden lameness in her hind limbs, but however managed to return to her shed from the dispensary. The next day the lameness developed into paresis. There was trembling of the hind limbs with inability to stand. The poor huge creature dropped down on her stifles and got up with so much excruciating pain and agony that one could hardly bear this sight. This recurred every 10 or 15 minutes especially at the slightest attempt to move the hind limbs. The appetite was much impaired and she passed dung and urine. The next day her condition was the same. On 1-3-32, she looked much run down in condition with haggard countenance. She dropped down never more to get up but could recline on her stifles and elbows. She tasted a little green grass and drank water. The Mahout's commands were obeyed.

The next day i.e., the 5th day of her illness her condition was worse. She looked much exhausted and emaciated. Complete paralysis of the hind extremities and tail had set in. Oedema developed in these parts and there was neither movement nor sensation but yet the dung and urine were evacuated. She could still raise her head and neck and support herself on the fore limbs giving the picture of an animal with a broken neck. She was conscious and sensible and took a few wheat cakes and water proving that her senses of deglutition were not impaired. Same was her condition on the following day. The temperature of the animal ranged from 98·4°F to 99·8°F during all these weeks. On the 7th day oedema developed on the head, neck and abdomen, pulse was rapid and went up 70 per minute (normal 30-35). She made a few futile attempts to get up and took 1 or 2 pieces of sugar cane and a little water in that lying posture. Grave was her situation on the next day with symptoms of approaching death. She was drowsy and unconscious eyes sunken and watering, mucus membranes cyanotic, body cold, pulse rapid and feeble, respirations slow nnd stertorous. She lay in this state of extreme prostration until released by death on the following day i.e., the 9th day of illness.

The brain was extracted immediately and a part of it—Hippocampus and Medulla—was sent to the Director, Pasteur Institute, Coonoor, for microscopical examination who replied that the brain was positive for rabies.

Remarks :—The case has been mentioned on account of its rarity and the singular way in which it attacked the animal. I believe it will serve a guide to those in charge of elephants.

The disease started suddenly without any premonitary symptoms. Some of the commenest symptoms which were wont to appear in the smaller animals such as salivation, dropping of the jaw, hanging tongue, difficult deglutition, suspicious countenance and habits were totally absent to the very end. Sensibility and consciousness were retained to the last, so much so, the animal looked like one ailing from anything but rabies. Never did I dream that the animal would develop rabies despite the timely Anti-rabic treatment it had. So much so, when the animal exhibited the first symptoms of acute lameness I was led to believe that it was a simple case of acute rheumatism. But later on, when paralysis actually supervened the previous history came to my rescue to diagnose the case as one of Paralytic Rabies alone. Now a bullet could have saved the agony of the animal but since the animal was not harmful to the public and since the Negrie bodies in the brain might not develop fully till late in the course of the disease, I allowed the animal die a natural death. It needs no mention that symptomatic and palliative treatment was adopted during the sickness.

Date on which animal was bitten ...	16-1-32.
Date on which Anti-Rabic treatment was commenced ...	24-1-32 i.e. 9th day.
Date on which the first symptoms of illness were exhibited ...	27-2-32 i.e. 43rd day.
Duration of illness ...	9 days.
Date of death ...	6-3-32—51st day.

SUCCESS OF TR. LOBELIA AETHERIS IN TETANUS.

BY

MOHAMED DAOOD, L.V.P., (PUNJAB).

Veterinary Officer, Government Stud Farm, Kunigal (Mysore).

Subject :—Bay, Indian, Filly, 3 years and 3 months.

History and examination:—The filly was found on 11th November 1931, to be a little stiff, head extended, nostrils dilated, neck streched out, tail raised and quivering, membrana nectitans protruding over the eye. The animal showed anxious expression, was excitable, temperature 103.2°F, mucous membrane injected, respiration accelerated, pulse frequent but weak. On searching well a scabed wound was noticed on the hock.

Prognosis :—Was favourable since the symptoms were not very exaggerated, animal still standing marked by the absence of any complication.

Treatment :—17—11—31.

(I) The animal was placed in a dark stall and soft bedding provided.

(II) The seat of the wound was scraped off well and the wound washed and cauterized with Carbolic Acid.

(III) After disinfecting the seat of injection a solution of 5 c. c. of Tr. Lobelia Aetheris and 5 c.c. of distilled water was injected subcutaneously. (Distilled water is added since the Tincture is very irritant and liable to cause severe swelling).

(IV) She was given boiled barley, bran mash, lucern and green dug grass to eat.

(V) Mag. sulph added in drinking water in 4 oz. doses.

1. P. M. :—A similar dose of the solution of Tr. Lobelia Aetheris and distilled water was injected in a different place ; and a bucketful of clean water placed before the animal.

5 P. M. :—A similar 3rd injection was given ; 4 ounces of Mag-sulph added to the drinking water ; and the same food as in the morning continued.

18—11—31 :—The filly was a bit easy.

8 A. M. :—The injection was repeated.

4 P. M. :—The second injection for the day was given, the dose being the same.

19—11—31 :—The condition of the filly was better. The injections were repeated morning and evening with the same dose.

20—11—31. The animal could move quite freely. Injections were stopped.

21—11—31. Symptoms were remarkably reduced.

22—11—32. All the symptoms disappeared; but the animal was reduced in condition and was debilitated.

Afterwards, nursing was continued with due care and attention; and the convalescent period extended up-to three weeks more, when the animal was discharged as completely cured on 25—12—31.

During my absence on a month's leave, Mr. Krishnamurty, the Veterinary Inspector of the Town Dispensary treated another filly quite successfully. Both the animals are now quite hale and healthy.

FISTULA OF THE CORONARY BAND OF THE HORSE.

BY

JOHN RUTHERFORD ANDERSON, D.V.S.,

Macon, Georgia, U.S.A.

In the cold latitudes where the temperature ranges from 32°F to below zero for five months or more of the year, fistula of the coronary band of the horse is very common. The ice and snow continuously covering the ground maintains a near freezing point at the junction of the hoof and the soft structures. This condition impairs blood circulation and the slightest injury to the band results in necrosis. The cold applied continually is also conducive, by blocking the vein valves and capillaries. When warm weather returns the circulation is not wholely established, there are small areas left out in which structural changes occur resulting in death of the part. Grease heel is primarily from the same cause ;-secondarily from infection.

The successful treatment of fistula of the coronary band is simple and safe far superior to the liquid preparation in common use—with a cone shaped stilet made of some hard wood, four inches long with the small end flat and round, about one quarter inch across the slope from end to end, the larger end say five eighths or three quarters of an inch, inserted into each fistulous tract. (The object is to enlarge tubes and get at bottom of them) rotating the stilet as you bring pressure to insert. This done, place a piece of Bichloride of Mercury in tract and push with stilet the piece to the tract's bottom. Repeat until the tube is filled to the skin surface ; pack in all the tube will hold. Fill every tract the same way ; place one layer of bandage around coronet ; tie same in front of the foot. The lump mercury should be crushed into suitable sizes before you begin to pack in order to proceed rapidly with the packing. The first piece of mercury put in usually makes the tube so dry that delay makes the balance difficult to insert. In 24 to 36 hours a perfect cast of all the diseased area can be removed with a pair of broad jawed forceps, leaving a depression the surface of same being healthy, rosy, with luxuriant granulations which close the opening rapidly: bichloride never attacks the healthy tissues in these cases. The rapid absorption of it by the necrosed tissue prevents the dissolving of more than is taken up by the diseased tissue. Constitutional effects are never a result.

LIQUOR FORMALDEHYDE IN CASES OF CANCER (?) HORN.

BY

SUNDERLAL B. PANDYA, G.B.V.C.,

Veterinary Surgeon, Kadi, Baroda State.

Cases of what is ordinarily known as "Cancer Horn" in cattle are met with in one's practice in fairly large numbers. Without entering into the etiology and symptoms of this disease, I wish to record here the success I have had with Liqr. Formaldehyde in the treatment of such cases. I realise that most of the cases of broken or fractured horns with a certain amount of growth, which are put down as cancer horn, may not be cancerous at all. Whatever the condition is due to, either bacterial, parasitical or mechanical cause, I have been using 5 per cent. solution of Liqr. formaldehyde after amputation and thorough cleaning. The structures harden quickly forming a black layer which peels off later leaving behind a healthy granular surface and mere Carbolic oil dressing achieves the rest. Formalin not being favourable for growth of all sorts of putrifying bacteria, the exuberant growth is arrested and the wound heels up nicely.

TREATMENT FOR CHRONIC LAMENESS.

BY

S. SESHADHRI IYENGAR, G.M.V.C.

Veterinary Assistant Surgeon, Chidambaram, Madras.

Cases of lameness in cart bullocks occur commonly when driven fast with loads. The chief parts affected are generally the right shoulders and elbows and sometimes the left shoulder and hip joints. Such cases are brought to the infirmary after trying all quackery and only in a chronic stage. The owners want a quick cure in spite of this delay. Treatment with liniments and blisters are of no use in these cases as the sprain is of interior muscles, tendons and ligaments over the joint.

I have treated here more than 50 cases with intramuscular injections of Sodi salicylas Naturalis in ʒi to ʒii doses dissolved in 20 to 40 c.c. Aqua Distillata into the seat of sprain alternately followed by injections of Camphorated oil, ʒi camphor in 20 c.c. Olive oil or sterile cocoanut oil, with 3 days interval and well massaged.

I treated some cases with injections of one drug only. The recovery is not so quick. The recovery is very rapid when both the injections are given. Two injections of each will suffice in majority of cases. Chronic cases of more than a year duration were treated successfully with these injections.

A CASE OF MARKING NUT POISON IN A BULLOCK.

BY

S. SESHADHRI IYENGAR, G.M.V.C.

Veterinary Assistant Surgeon, Chidambaram, Madras.

Subject :—Mysore Bullock aged 7 years.

History :—The animal was used to be given 2 or 3 marking nuts once or twice a week preserved in neem oil as tonic as advised by a quack. This is done by many cattle owners of this taluk.

Three nuts were given to this animal on the day of occurrence at about 9 A.M. The animal was put to the carriage at about 11 A.M. The animal was not able to drag the bandy after journeying 2 miles and then it was brought to the dispensary at 1 P.M., for treatment.

The following symptoms were observed :—The whole body was swollen and greater on the head and ears; the animal was weak, mucous membranes of the mouth and rectum swollen and highly inflammed, vesicular like eruptions under the tongue and lower jaw ; frothy discharge from the mouth and nostrils and frequent diarrhoea. Temperature 102.4°F.

The animal was given Pot. Permanganate in the evening and the next morning.

Conjee diet and a dozen eggs beaten in a pint of milk was also prescribed.

The animal made an uneventful recovery on the 3rd day.

Notices of Drugs.

SULFARSENOL IN THE TREATMENT OF SEPTICÆMIC INFECTIONS "POST PARTUM".

Extract from " L'Arsenatherapie " Ex-Medicine Canine Par Le " Salfarsenol " by Charles Babb."

Very confident in the bactericidal property of Sulfarsenol, we are mentioning in this chapter a new therapeutic application which deserves to be thoroughly investigated, since post partum infections are quite frequent both in large and small animals.

Already in his thesis in April 1925, Dr. Leonardon Lapervenche pointed out the very favourable and preventive actions of Sulfarsenol in septicæmic post partum infections.

In a publication of June 1925, (Paris Medical) M. Professeur Maurice Riviere of Bordeaux also related the excellent microbicidal effects of arsenic, especially Sulfarsenol in puerperal infections. He concluded in these terms. "Arsenic salts seem to constitute the medicament of choice in puerperal infection. Since this is clinically established it is of importance to employ this method—Sulfarsenol will generally be sufficient to check the complications and to stop the infection from becoming worse".

" We are even now convinced that in treating preventively by subcutaneous injection, each woman who has had a more or less complicated confinement terminated by a difficult intervention and without waiting for the appearance of the infectious phenomena, we shall succeed in distinctly lessening obstetrical morbidity with our service."

This lecture made us try this treatment and since that time we have used Sulfarsenol in cases of "post partum" uterine infections which were brought to our clinic.

In twelve cases of bitches affected with dangerous metritis, and threatened with septicaemia with a discharge of an unpleasant and putrid nature, Sulfarsenol has given most successful results. A treatment of three to four days was sufficient to entirely dispel the infection and to change the nature of the uterine discharge which quickly became odourless and gradually stopped in two weeks.

In 4 cases which we thought hopeless only two cures were obtained concurrently with uterine douchings and hypodermic injections of Champhor in Oil or Caffeine.

Following our experiments we have treated preventively 8 patients during difficult and tardy whelping and we have had the opportunity of preventing septicæmic infections which were threatening. In these cases, Sulfarsenol was employed by the intravenous route every 24 hours for the first three days followed by every 48 hours upto the time of cure. Here are three successful clinical observations :—

Case No. 1—A fox terrier bitch, three years old was brought to our clinic on the 1st July 1925. It was in the stages of difficult whelping, which had already started two days previously. By means of a forceps, the pups were removed ; the uterine discharge which followed gave off a putrid and characteristic odour of septicæmic infection. The prognosis which was grave, was still more serious owing to a deep torpor where the operation was involved. Douching with solutions of Potassium Permanganate (0'5 per 1,000) was given three times a day. We tried intravenous injections of Sulfarsenol as follows :—

1st July	1st injection	0 gr. 04
2nd „	2nd „	0 gr. 06
3rd „	3rd „	0 gr. 06
5th „	4th „	0 gr. 10
7th „	5th „	0 gr. 12
9th „	6th „	0 gr. 12

The first two days passed without any improvement but without any bad effect. An injection of Camphor in Oil was necessary in the morning and in the evening to sustain the heart. On the 3rd day, the general state revived and the bitch showed a desire for the pups which up to that time she had not troubled about. Moreover the discharge had lost its putrid odour. On the 4th day the patient started to improve, and during the days following the general state gradually became better until 10 days after the operative intervention, the bitch was completely cured.

Case No. 2—A German sheep bitch, 5 years old, was brought to our clinic on 20th July 1925. The previous day she had given birth to seven well nourished pups to which she paid no attention. She was very much spent, refused all food and vomited without ceasing.

Temperature was 41°, the womb was very painful on palpation and vagino-uterine exploration brought about the removal in the midst of a sanious and evil smelling discharge—of the putrified placentary matter.

In the face of this grave state, we advised the owner, who gave his consent, of Sulfarsenol treatment together with uterine disinfection.

Every day 3 douches of 2 litres of H_2O with 0.5 per 1000 of Potassium Permanganate were regularly given. To revive the general weak condition, a hypodermic injection of 25 cm physiological serum with 15 centigrammes of Caffeine was given in the morning and evening.

Intravenous injections were given as follows :—

20th	July	1st	injection	0.08	centigrammes Sulfarsenol
21	,,	2nd	,,	0.10	,,
22	,,	3rd	,,	0.10	,,
24	,,	4th	,,	0.12	,,
26	,,	5th	,,	0.16	,,
27	,,	6th	,,	0.18	,,

From the 2nd day, the general state was better although the temperature remained at 40.5°. Vomiting had stopped however.

In the evening of the 3rd day, the animal took a little food of its own accord. The discharges became less abundant and absolutely without smell. During the following days, improvement was more decided, and on 30th July, treatment was considered unnecessary as the bitch was cured.

Case No. 3, another fox terrior bitch, 10 years old, from which it was necessary to take 3 dead pups, was treated with Sulfarsenol 3 days before the operation and 5 days after. The infection which we believed would be fatal, was not produced. The bitch was very quickly cured.

Notes.

Indications are not wanting to those who have eyes to see that the Veterinary profession in India is in immediate danger of breaking down under the weight of injustice and indignity heaped upon it from day to day. How long, can all its manly struggle keep it going ? There is a limit to suffering and the present Retrenchment in the pay and prospects of the profession will only prove to be the proverbial last straw to break the camel's back.

* * * *

Ill-paid, Over-worked, Discontented, already suffering from a sense of injustice extended to it, when compared with other professional services, the profession has been praying, petitioning, prostrating, in short, exhausting all the weapons in the armoury of Beggary, with the hope of touching the heart of the Government and getting something better. With what result ?

* * * *

The profession has lost what it had. If rumour is to be believed the initial pay is to be reduced still, and the Selection Grade is to be the laughing stock of all services. The number of hands has already been reduced. A number of hospitals has been closed. Recruitment to the service has been stopped. We wonder if a worse lot has ever befallen any other service which is intended for the benefit of the ryots and live-stock industry in this country.

* * * *

Fates have been too cruel against the profession. It is too much to expect the profession to survive this ordeal. We would respectfully warn the Government that it should not be surprised if there is a set back in the activities of the profession in the near future. What more can be expected from sinking souls!

* * * *

The profession has been asking for Bread and it has been given Stone instead! Hideous Mockery! Is there none either amongst the officials or non-officials to come to the rescue of the profession? We appeal to the Hon'ble Ministers and Heads of Departments to do their utmost to exempt the Veterinary profession which is already miserably paid, from the proposed reductions.

* * *

We invite the attention of our readers to a communication that appears elsewhere in this issue, from an esteemed correspondent, who deplores the absence of any action on the part of the profession to represent its "peculiar difficulties" to the Government and thus make an attempt to ward off or mitigate the impending danger. We commend the suggestion to all concerned.

* * *

Will the profession now alteast realíse that by killing the Associations they have killed themselves? Well, if there is none to plead for them, they have none to blame excepting themselves. It is never too late to mend.

* * *

We feel glad to inform our readers that the Graduates of the Bombay Veterinary College, residing at present in Bombay, were "At-Home" to Mr. V. R. Phadke, G.B.V.C., J.P., the first Indian to be the Principal of the Bombay Veterinary College, (which honour he rightly deserves), on Sunday the 25th September, 1932. Khan Sahib N. D. Dhakmarwala, G.B.V.C., retired Professor of the College, eulogised Mr. Phadke to which the latter responded in a fitting manner.

* * *

We are glad to note that Rinderpest has subsided in almost all the districts of Madras Presidency. This has given a chance to the touring staff to carry on S.S. inoculation systematically in every village. Till now the practice was to carry these inoculations only in the infected villages. Since many villages get the infection almost simultaneously it is not possible to send the touring staff in time to all these villages. The result is that many villages suffer heavy loss from cattle mortality before the inoculation campaign is started there.

* * *

The Madras C.V.D., seems to have realised this ugly situation during the recent severe outbreaks. We understand now that arrangements are being made to start S.S. inoculation camps in as many villages as possible, as a true preventive remedy to help the poor ryot as fully as possible, without waiting for the breaking out of the disease. This is a commendable step in the right direction.

* * *

Owing to the absence of outbreaks of Rinderpest and other contagious diseases in the country parts, the Touring Veterinary Assistant Surgeons should find it possible to arrange such S.S. inoculation camps on a large scale. The newly started Madras Serum Institute should also be able to supply the necessary quantity of serum and virus. In the absence of threatening Rinderpest in a village, the ryots may not feel tempted to have their animals S.S. inoculated and the staff may find it difficult for some time to coax them; but the personal efforts of the District Veterinary Officers in the villages should be able to overcome this difficulty.

* * *

Unless advantage is taken of the present respite and S.S. inoculations are carried on over large areas, it will be difficult to justify the opening of a Provincial Serum Institute not to speak of the existence of a large number of of District Veterinary Officers and subordinate touring staff. The Head of the Department seems to be keenly alive to this fact. We hope Madras will lead the other provinces in this matter. No doubt the absence of Compulsory Inoculation Act is a great handicap. Still the enthusiasm and energy of the District staff should be able to achieve much substantial results.

* * *

Many of the District Veterinary Officers in the Madras Presidency have been already carrying on the propaganda work very earnestly with the aid of the Lantern slides supplied to them for the purpose by the Department, but it is very unfortunate that they should not have been supplied with lantern but are asked to manage as they can, getting the loan of one from the nearest Health Inspector or some such official! We believe this is only a temporary make-shift and soon lanterns will be supplied at least to each of these District Veterinary Officers before they feel the handicap and lose their enthusiasm.

* * *

Now that the propaganda work through lantern lecturing and visits to the village has become a chief plank in the programme of the District Veterinary Officers, it is desirable that Officers knowing the local languages should be posted to district work as far as possible. In some departments the Gazetted Officers have got to pass a second vernacular test. Introduction of similar test may soon become necessary in the Civil Veterinary Department if work should progress rapidly.

* * *

We understand that the Special Rinderpest Officer in Madras has submitted *an interim* report on some of his investigations. This is said to contain important suggestions for the guidance of the workers in the field. We wish that this report is given a wide publicity through the medium of the professional journals for the benefit of the workers even beyond the presidency. Reports on the results of such investigations are of special value for all scientific workers and therefore they are eagerly looked for by the profession. Conferences and Association meetings would be suitable occasions for bringing such reports to the notice of a large gathering of members. In the absence of these at least the Press should be taken advantage of. We hope our suggestions will fiind favour with the authorities concerned.

* * *

It is now realised by the heads of almost all the provincial C. V. D's and public men interested in the welfare of cattle; that the uncontrolled movements of cattle are fruitful sources of spreading infectious diseases among live-stock in this country. In the absence of such consensus of opinion, it is a wonder why attempts are not made either by officials or non-officials to bring in a bill to control the movements of cattle. The Veterinary Surgeons working in the rural parts should educate the public on this matter and create strong public opinon.

Correspondence.

To
The Editor,
The Indian Veterinary Journal, Madras.

Dear Sir,

I was much interested in reading the Editorials in the July number of "The Indian Veterinary Journal." Your plea for a considerable development in Veterinary Research in the case of the Live-stock of India is, if I may be permitted to say so, thoroughly sound and should be welcomed by all who are interested in the improvement of Live-stock in this country.

As you are probably aware this Society is concerned with the improvement of the breed of horses in India. It is doing its best, within the limit of its resources, to promote this improvement by,

(a) stimulating the production of good horses by the establishment of a profitable market for the breeders, and

(b) by initiating scientific methods of mating and rearing; but its efforts are much handicapped by the lack of facilities in India for Research in the questions of genetics and equine disease.

From the statistics given in the litte pamphlet which I enclose I think you will see what a valuable asset it would be for India if she could be self-contained in the matter of horses for all purposes, and I feel sure that you will agree that a higher standard of knowledge of genetics generally and more wide spread information on the subject of prevention of equine diseases would assist materially to this desirable end.

As you truly say the Governments' plea is "lack of money." But surely it would be worth while to strain every nerve to prevent the enormous annual wastage which takes place in India.

Yours faithfully,
S. B. James,
Major General,
C.B., C.I.E., M.V.O.

Napier Hotel,
Poona.
30—7—32.

THE NATIONAL HORSE BREEDING AND SHOW SOCIETY OF INDIA.

Some Facts About the Horse Situation in India.

1. There is a grave shortage of horses in India,

2. This means that India is very largely dependent on other countries across the sea for her horse supply. This is not consistent with the dignity and status of this great country.

3. This again means that large sums of money (over 70 lakhs) are sent out of India annually to purchase foreign horses.

4. Most of this large amount of money could be saved to India if the country were self-contained in horses.

5. To make India self-contained in horses, a great expansion of horse-breeding within the country is necessary.

6. The Society was founded with this object in view.

7. Consider the immense benefit it would be to India both economically and from the point of view of defence (India contains the Empire's land frontier), if the country produced within her own boundaries all the horses required.

8. To enable this to be done the whole country must combine to assist the Society to carry out its object.

9. There is also a shortage of good horses throughout the world, especially Polo Ponies.

10. Consider how advantageous it would be for India to be able to assist in supplying the world demand for horses and polo ponies, and so bring money into India instead of sending it out.

11. Everyone who has the interest of the country at heart should therefore join the Society.

12. In no country can horse-breeding progress unless it can produce its own stallions.

13. Therefore India must turn her attention to the production of her own stallions.

14. To enable India to produce her own stallions she must be able to test her potential stallions, and the racecourse is the only known modern test. It is useless to breed without this test.

15. At present there is not sufficient opportunity for testing the potential stallions of India, owing to the comparative lack of racing for Indian horses and of stakes (breeders' rewards) for the produce of the country.

16. The following figures prove the contention in para 15· 45lakhs are given in stakes every year in India. Of this large sum less than 2 lakhs are given to Indian horses.

17. In addition to this there is only one Racing Class for Indian Horses in India as against 4 Classes for imported English and Australian Horses and 3 Classes for Arabs.

18. Therefore the horse-breeding industry in India does not receive adequate encouragement. In fact, the importation of horses is encouraged at the expense of Indian breeders.

19. With adequate support through racing the Country would gradually become self-supporting in horses.

20. During the short period of its existence the Society has accomplished a good deal; but its activities have been sadly curtailed by lack of funds.

21. Without entering into details, the operations of the Society have resulted in a very real and important increase of interest in Indian horses, and in a recognition of their merits throughout the world.

22. With general support throughout the country and a largely increased membership, the organisation of the Society could be expanded to cover the whole of India and to assist in the re-establishment or expansion of horse-breeding in all suitable areas.

23. The larger the membership of the Socity the more it will represent the united voice of the country and form a solid body of public opinion to press the demands and requirements of the important home industry of horse breeding, and the better it will be able to assist the breeders, the agriculturists of India, to secure a more profitable market for their produce.

24. Therefore the Society appeals to everyone in India to appreciate the economic value of making the country self-contained in horses, to recognise the loss now being suffered by India owing to the shortage or home-bred horses and to join the Society. (See forms attached).

DEAR EDITOR,

What is it that is happening to our profession? The atmosphere is so thick with rumours! They say that there is to be reduction in our pay, recruitment, hospitals etc. Whatever "Reduction" might mean to other services, it is going to prove a Death-knell where we are concerned. The profession is to be hurled down the depths of oblivion, from which it may not be possible for it ever to recover. What are the Upper Ten in the profession doing? Can they not in collaboration with the Directors of Veterinary Services interview the Ministers, Secretaries, even Governors and save the profession, from this threatening calamity? They may say it is all "useless"; but need they be told the value of repeated representations? How is the Government to know the peculiar difficulties of our profession? Does any one believe that the Government will bestow every blessing on the profession, unasked and unrepresented? It is for the Upper Ten to plead for the Down-trodden in the service.

Amongst our men wiseacres were not wanting to foul their own nest in condemning the activities of Associations—Associations at least were putting forth the grievances of the profossion before the Government in a bold manner which no individual in service can do. Such Associations were even called upon by Royal Commission to submit their proposals, which they did. Now there is none to voice the feelings of the profession. Will all those who took pride in killing Associations gloat over the present plight of the profession? Or, will they be men and come out and show what they can do during such crisis, now that the field is free for them from the obnoxious activities of inconvenient Associations.

I mean no spite to anybody. I only dread to think of the fate before us. Associations at such junctures could have strengthened the hands of well-meaning Directors of Veterinary Services, of whom some are nobly fighting single handed the battle of the profession. Without an Association, the profession is mute now, with none to plead on its behalf. One can only pray with the poet :—

Lead, kindly Light, amid the encircling gloom,
  Lead Thou me on!
The night is dark, and I am far from home,
  Lead Thou me on!

Yours faithfully,
"DOOMSDAY".

THE EDITOR,
The Indian Veterinary Journal, Madras.

Dear Sir,

Thank you very much for the congratulations that you have sent to me in yonr letter dated 21st. July 1932, and through the columns of the last issue of your journal, on behalf of the Indian Veterinary profession, on my success in Canada. I also thank you for the good wishes expressed for my future career in this country,

I did try my best to avail properly, the opportunity which was afforded to me, as an experiment, by the University of Toronto. The veterinary education that I received at the Punjab Veterinary Veterinary College, the training that I got at the I.I.V.R. Muktesar, and the professional experience of the Govt. Cattle Farm. Hissar. in India, made by work much easier in Canada to get through the B.V.Sc., V.S. examinations of the University and obtain the first position.

The principal, Dr. McGilvary, and the professorial staff of the Ontaric Veterinary College were very kind and sympathetic towards me during my stay witn them, and I think I really added a great deal to my professional knowledge from there.

The course in Dairying that I am taking at the University and the British Dairy Institute, Reading, will, I hope, be of an additional use to me in my profession.

In October next I shall commence my studies at the Royal Veterinary College London, for the M.R.C.V.S. diploma, and I hope I shall do my best to utilise the concession granted to me by the R.C.V.S. Council in the most suitable manner.

Please let me extend, through the columns of your esteemed journal, my best wishes for the Indian Veterinary profession, its members and the journal.

THE UNIVERSITY,
Reading, (*England*).
17th August, 1932.

Yours faithfully,
R. L. KAURA, B.V. SC.L. V.P. Hons., V.S.

Extracts

RABIES IN THE MONGOOSE.

BY

S.D.S. GREVAL, B.SC. (PUNJAB), M.D., Ch.B., D.P.H. (LIVERPOOL), MAJOR, I.M.S.,

Officiating Director, Pasteur Institute of India, Kasauli.

Reports from Records including a report on the first positive brain of mongoose examined at Kasauli.

1. *Case No. 2871 of 1932.*

H.S., aged 60, male, of K.K., district Ludhiana. Bitten on 29th April 1932. Came for treatment on 1st May, 1932. Finished treatment on 14th May. 1932. He stated:—

'I was watering my oxen in the animal shed when a mongoose rushed in amongst them. I lifted it up and threw it away. I had hardly turned my back when it rushed back again, bit me behind and under the knee and held on. I removed the animal and squeezed the wound with the result that bleeding occurred and covered an area about the size of two pice. The blood was washed with water !

(Translated from Punjabi, by S.D.S.G.).

On examination four freshly formed small scabs, enclosing an area about 3—4 inch in diameter, were seen. No caustics or antiseptics had been applied. There was no sepsis. The patient was a tall and well built subject.

The mongoose, probably a male, had been killed and thrown away.

The bite was classed as *moderately severe* (class III, *Hempt*) and treated accordingly.

2. *Copy of a letter received with the specimen No. 136 of 1932.*

Sir,

'I am sending you for examination the brain of a suspected mongoose. This mongoose has bitten a girl badly. I suspect it must have been suffering from rabies as it would not stop attacking even when beaten off. At last it was killed. Please inform me by wire if the girl must be sent to Kasauli for treatment.

B., District Jullunder,
3rd May, 1932.

G. S.
V.A.S.

(Translated from Urdu, by S.D.S.G.)

Sections from the brain, which was sent in spirit, showed Negri bodies of varions sizes. This specimen was the first positive specimen examined at Kasauli. The girl never turned up for treatment, presumably due to the pressure of work in the village at the time of the harvest. The animal, as was ascertained later was a male.

3. *Copy of a letter from M.O.H., C.B.M., dated 9th May, 1932,*

Dear Sir,

Yesterday afternoon, I received a case from Meerut with the following history :—

A boy, aged 4½, was bitten on his bare buttocks by a mongoose. The mongoose attacked several other persons who escaped being actually bitten. The mongoose had been living in the compound of the house for a long time and the father of the boy had noticed that the mongoose, a few days previous to this incident, had begun to grow thin. After the incident the mongoose was caught and placed in a cage and died the next day.

As the wounds are superficial I have commenced the usual class II treatment. The question is whether this case should be continued as an ordinary class II.

I shall be much obliged if you would advise me in this matter, as I am not sure whether a mongoose is one of those animals which are capable of suffering from rabies.'

Later, the patient was brought to Kasauli for treatment (Case No. 3298 of 1932) and the following additional facts were ascertained :—

There were no mongooses living in the hedge round the compound of the house. They were almost tame and used to come into the house for food. Latterly only one mongoose was left. It attacked people in the house unprovoked but was frightened off by the adults. The patient, a child, was bitten without provocation. When the mongoose was caught it was discovered that it had broken its teeth and was bleeding from the mouth. Presumably it had been fighting and had killed its companion.

The teeth marks and the scratches had all healed without leaving scars. Only one long scratch, presumably caused by tooth (It was found where the head of the animal had been during the attack) had looked red. Iodine had been applied almost immedietely.

This case was also classed as *moderately severe* (class III *Hempt*).

4. Case No. 3387 of 1932.

S. R., aged 25, male, of M. near Thanesar, district Karnal, Bitten on 16th May 1932. Came for treatment on 24th May, 1932. Finished treatment on 6th June 1932. He stated :—

'I was repairing the fence of my millet crop (the millet is grown out of season for the cattle when grass is scarce) when I saw a long and fat mongoose, at a distance of about 10 yards, uttering sounds of cur-cur-cur-cur. The next moment it attacked me and climbing up my leg bit me on the thigh, through cloathing, and held on. I detached it and threw it away. It then made for a well about half a furlong away. Men were bathing there and it created a stir amongst them. My cousin killed it and we buried it. The wound looked red though no blood flowed from it.

Mongooses abound in my village. When provoked they often attack people specially children but are easily frightened off. I was surprised at the behaviour of this mongoose.

The animal was presumably a male (large size and no teats).

(Translated from Hindi, by S. D. S. G.).

On examination the site of the bite showed two linear scars about ½ inch apart. No antiseptics or caustics had been applied. There was no sepsis. This patient too was a tall and well built subject.

This case was also classed as *moderately severe* (class III. *Hempt*) and treated accordingly.

5. From the Annual Report of the Institute for year 1929, part, page 4.

'The second case was reported from Delhi and the following are the brief notes on the case as reported to us :—

"Mrs. B. P. (Indian), aged 35, was bitten on the left great toe by a mongoose possibly rabid, on 21st September. 1929. The wound was dressed and healed up within 3 or 4 days leaving small scar.

On 31st October, 1929, the patient fell ill and complained of pain in the left leg.

2nd November, 1929.—Pain in the left leg from pelvis to foot; feeling of anaesthesia; pain in uterus.

3rd November, 1929.—Pain over cardiac region. Itching in big toe (left). Feeling of constriction in throat. No temperature. Spasm of jaw; and unable to drink water. Restlessness; no sleep; fits all night.

4th November, 1929.—Fits ceased at 8-A. M., perspiration; death 12 noon".

The patient had not received any antirabic treatment. The case appears to have been undoubtedly one of hydrophobia and is reported since it is the first death to be recorded at Kasauli in a patient bitten by a mongoose'.

6. A table showing mongoose bite cases and mongoose brain examinations at Kasuuli during the last 10 years from 1922 te 1931.

Year.		Cases,		Brain examinations.
1922	...	4	...	0
1923	...	4	...	0
1924	...	4	...	0
1925	...	7	...	0
1926	...	0	...	0
1927	...	10	...	0
1928	...	0	...	0

1929	3	2	Negative.
1930	0	0	
1931	0	0	
Total.	32	2	

During the same period :—

Total number of cases treated 67,326.

Total number of brains examined 4,708,

7. *Identification of the mongoose.*

There is no record of the identification of the animal in the Pasteur Institute, Kasauli. According to the *Fauna of British India* 'the only generic type within the Indian area is *Herpestis*, the various subdivisions such as Urva, Taeniogale, etc., raised to generic rank by Hodgson, Gray and others, not being distinguished by characters of more than specific Importance '.

I. Comments including Speculation.

Does rabies come into civilization from the wooded wilderness?

McKendrick in the *Tropical Diseases Bulletin* for September 1931, quotes U. Toit's summary to the effect that the yellow mongoose of South Africa (*Cynictus penicillata*) has been proved to be the sole transmitter of rabies in that country at the present moment. The conclusion drawn, however, is that apparently the infection has become somewhat modified during its sojourn in the wild carnivore '. Could one not reverse the picture ?

Burma where forests abound, has more than its fair share of rabies. In Arabia, where forests do not exist, one never hears of a death from rabies : such was my experience as a Specialist in Prevention of Diseases to the Aden Brigade for over four years : and such is the experience of the Civil Surgeon, Aden, who writes :—

'I have not seen or heard of a single case of rabies in Aden and the surrounding districts. I have been in Aden, now, for three and a half years.

From the information obtained from reliable and intelligent persons jackals are to be found in the interior of Southern Arabia. As regards, wolves, foxes and mongooses nobody seems to know if they are at all to be found in this part of Arabia '. (From a letter received on 30th May, 1932, Receipt No. 5422 of 1932).

Often one gets a history from patients, concerning their own rabid dogs, to the effect that their dogs never left the house unaccompanied and were never bitten by a stray dog. Could they not, then, have been bitten by a rabid mongoose in a bush in the compound of the house ? In the localities where rabies occurs both in the dog and in the mongoose, a rabid dog biting a healthy mongoose, and letting it go to develop rabies later, is only a possibility, while a rabid mongoose biting a healthy dog, which will develop rabies later, is a reasonable likelihood.

Again, one occasionally hears of human cases dying from rabies, diagnosed by experts, with no history of a bite or even a lick from a stray dog. I heard of one such case at Rangoon. The victim, a son of a well-to-do Burmese family, kept rabbits as a hobby. Was he ever bitten by a mongoose ?

Popular belief, in the Punjab at any rate, attributes rabies in the dog to a bite from a wild-carnivore, a female jackal with young ones (*phonhin*) being specially incriminated.

A very strong argument against this hypothesis is the fact that rabies in a country can be stamped out by legislation against dogs. *Like the production and* *the use of fire which in ancient India was procured from a forest and then kept going in the village, could the genesis of rabies in the wild earnivores be one thing and its very rapid spread in the humanised carnovores another* ? Possibly the strong instinct of mutual distrust in the wild carnivores and the unsuspecting sociability of the humanised carnivores are responsible for the seeming state of affairs and the usual belief held. Or tnere may be some other biological factor at work *making the disease smoulder in the forests and flare up in ihe populated areas.* Aetiology in medicine is a very small fraction of œcology in biology.

III. Bearing on Treatment.

A mongoose, though a carnivore and possessing the carnivorous dentition and inclinations, has smaller and finer teeth than a dog or cat. The bite will draw blood and yet not look like a bite one is accustomed to see in an antirabic clinic. Besides, the bites appear to heal without any apparent sepsis. Within a few days all evidence of damage to the skin may disappear. In my opinion all cases of mongoose bite, when the animal has shown zeal and energy in inflicting the bite, should be tseated, at least, as *moderately severe* (class III, H*empt*).

Summary.

1. Three new cases of mongoose bite have been described. One positive mongoose's brain has been reported. Attention is drawn to a death presumably from mongoose bite in an untreated case. All mongoose bite cases treated and mongoose brains examined at Kasauli during the last lo years, from 1922 to 1932, are tabulated.

2. The possibility of rabies coming into the domestic carnivora from the wild carnivora is discussed.

3. The suggestion is made to the effect that a mongoose bite should be treated as a serious bite.

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THE INFECTIVITY OF MILK AND MEAT IN RABIES.

To the Editor, The Indian Medical Gazettee.

Sir,

Can you inform me through the columns of your journal whether the virus of rabies may be present in the meat of a cow or pig bitten by rabid dog : if so, for what period, and whether such meat could be safely eaten ? This question is constantly asked by patients and the public, and no definite views about it appear to prevail. A consultation with a Veterinary Surgeon has not improved my knowledge, and hence my request.

Is it safe to drink the milk of a cow bitten by a rabid animal and to eat the eggs of a fowl similarly affected ?

I should be very grateful for an authoritative opinion on this subject.

Yours, etc.

A. F. Coelho, M.B.B.S.

Father Muller's Charitable Institutions,
Kankanady. P. O. Mangalore,
5th May, 1932.

Note :—We are not sorry that our correspondent has raised this question, for it is one which is constantly being asked. The following abstract from 'Rabies and Antirabic Treatment in India' by Lieutenant-Colonel E.D.W. Greig, C.I.E., I.M.S. (retd.). published when he was Director of the Pasteur Institute of India, gives the authoritative opinion asked for :—

"In the body of a rabid animal the virus is found in the nervous system, that is to say in the brain, spinal cord, and large nerves, also in the salivary glands, and in certain of the internal organs such as the pancreas and suprarenal glands. For practical purposes the blood and other structures of the body such as bone, muscle, etc., do not contain the virus in sufficient quantities to convey infection.

'The virus passes from the brain to the salivary glands and thence into the saliva of the infected animal. The saliva of human beings and herbivora contain practically no virus. Before infection can occur, the virus must gain entrance into the body through some broken surface in the skin or abraded mucous membrane. This is usually brought about by the bite of a rabid animal where the skin is penetrated by the teeth and virus thus gains access into the body through this route. The chance of infection from a lick through a cut or abrasion is very much smaller than that of a bite. In these cases the cut or abrasion must be fresh, as granulation tissue in a healing wound forms a barrier to the passage of the virus.

'The milk of animals suffering from rabies has seldom been shown to contain the virus, which probably exists in the milk in very high dilution, so, if no recent cuts or abrasions are present on the lips or mouth, such milk can be drunk with impunity. In the milk be boiled, the virus, even if present, is killed, thereby eliminating even the remote chance of infection by this unlikely route.

The virus is not absorbed from the unabraded alimentary tract and is killed by digestion. In answer to our correspondent, therefore, we may say that the flesh of animals bitten by a rabid animal, if cooked, the milk of such an animal, if boiled, or the fowl's eggs if cooked, would be perfectly safe. Raw flesh, milk and meat would only be dangerous—and that only extremely rarely—if there were fresh cuts or abrasions on the lips or mouth or tongue.

One case in the literature shows that the saliva of herbivora may very rarely contain the virus, it was reported by Cunningham, *in the Annual Report of the Pasteur Institute of India, Kasauli, for 1926. on p. 5.* The patient, a mason by trade, was brought into the Lahore antirabic centre suffering from hydrophobia said to have been the result of contact with a rabid buffalo eight months previously. The man died of hydrophobia after two days illness. Searching enquiries were made, and the following facts elicited. The patient's hands were usually freshly cracked and abraded owing to his handling lime with a brush whilst slaking it. When he was giving medicine to the buffalo his cracked hands came in contact with the animal's saliva. The buffalo died three days later of rabies; it had been bitten on the nose by a dog a month previously. No *bite* was observed on the man's hands at the time, nor did he mention that he had been bitten. He never mentioned to his relatives at any subsequent period that he had ever been bitten by a dog, cat, or jackal at any time before or after being licked by the buffalo.

In this case infective saliva apparantly came into contact with fresh abrasions on the hands, and the case is on a par with that of a British sergeant, mentioned by Cornwall, who was indirectly infected through saliva of a rabid dog present on its leash. [Editor, *I.M.G.*] *I.M.G. August, 1932.*

A RAPID PARAFFIN TECHNIC

BY

W. L. McNAMARA, M.D., HINES, ILL.

While the commonly employed methods for paraffin impregnation of tissues following rapid dehydration are suitable for surgical diagnosis, they cannot be used for minute histologic study or photomicrography. This is due to the shrinkage of the tissue with resultant distortion and loss of cell definition.

The necessity for a rapid method, yet one which would permit of detailed histologic study arose during a period of insufficient technical assistance and led to experimentation along these lines. This resulted in a method, which, in our hands, has given highly satisfactory results and has been adopted routinely in this laboratory to the exclusion of all other methods.

The procedure is as follows :—

10 per cent formalin fixation.
Cut pieces for section 2 mm. in thickness.
80 per cent alcohol fifteen minutes.
95 percent alcohol forty-five minutes (40 x as much solution as tissue).
Acetone c. p. for fifteen minutes. Pour off and add 40 x as much fresh acetone as tissue for seventyfive minutes.
Paraffin (hard 54°), in oven one hour. One paraffin only is used.
Imbed and section.
In removing paraffin from slide preceding staining, one xylol only is used.
The usual staining processes may be employed.
Sections are blotted following graded alcohol and cleared with some essential oil (cloves, origanum, etc.).

The secret of success in this method lies:

1. In the avoidance of any of the commonly used clearing agents (xylol), chloroform, tuluol, benzol, etc.).

2. The least possible time in oven heat. The clearing agents and prolonged heat are the factors largely responsible for tissue shrinkage.

When no clearing agent other than an essential oil is used, paraffin impregnation takes place rapidly and is complete in less than one hour, thereby obviating long continued oven heat. Acetone, being highly volatile, is rapidly driven off by the heat of the oven ; hence, there is no necessity for more than one change of paraffin.

The preceding technic carefully followed, results in rapid dehydration and paraffiin impregnation with a minimum of tissue shrinkage and cell distortion.

"*The Journal of Laboratory and Clinical Medicine.*" *Vol. XVII. No. 11.*

A PRACTICAL STAINING METHOD FOR INTESTINAL PROTOZOA.

BY

H. TSUCHIYA. SC. D., ST. LOUIS. MO.

As contrasted with the time-consuming procedures employed for securing permanent preparations of intestinal protozoa by means of iron-hematoxylin stain, the following method is found to be simple, rapid and efficient, especially when protozoa are required to be stained quickly for diagnostic work.

The technic is described as follows ;—

1. Smear a bit of stool on a clean slide, and make a thin moist film (thin enough to read newspaper print through) by using a drop of normal saline as diluent, Keep the preparation moist at all times during this and subsequent steps. This is vitally important.

2. Fix immediately in warm Schaudinn's fluid (65 c. c. of saturated Hgcl^2 and 35 c. c. of 95 per cent alcohol to which 3 c. c. of glacial acetic acid is added before use, and this is heated to 60°C.) for ten minutes in case of trophozoites and fifteen minutes in case of cysts.

3. Remove sublimate by immersing for ten minutes into 70 per cent alcohol to which several drops of the tincture of Iodine are added.

4. Wash in running tap water for one minute.

5. Mordant in a 4 per cent aqueous iron alum (ferric ammonium sulphate) for twenty minutes.

6. Wash in running tap water for three minutes.

7. Shake off the excess water from the slide and immediately apply Wright's stain in a similar manner as for blood smear, i.e,, one minute with Wright's stain and five minutes after an addition of equal number of drops of distilled water.

8. Wash in running tap water for one minute, and shake off the excess water from the slide.

9. Dehydrate by graded alcohol ; fifteen seconds each in 70 per cent, 95 per cent, and absolute alcohol.

10. Clear in two changes of xylol for three minutes each.

11. Apply a coverslip gently over a drop of neutral balsam, and leave in an incubator at 37°C. until examined.

Contrary to the hematoxylin methods, this method does not require differentiation of Wright's stain by means of a mordant, the process of which is considered difficult by those who are inexperienced. Furthermore, Wright's stain gives a very clear picture, and enables one to recognise readily the structural characteristics of an organism in question. Such may be well illustrated by the nuclei of various endamebae in which the karyosome, chromatin granules, and linin network are brought out in dark blue color against a pinkish back ground of eosin.

By virtue of the simplicity and the brevity of time spent for the technic together with vivid color contrasts of various structures, this method can advantageously be employed in a final diagnosis of intestinal protozoa, whenever it is difficult to determine with certainty the species present.

"The Journal of Laboratory and Clinical Medicine." Vol. XVII, No. 11.

OUTLINE OF DIAGNOSIS AND CONTROL OF COMMON POULTRY DISEASES.

BY

FRANK BREED, LINCOLN, NEBRASKA.

The following outline is intended to assist in the diagnosis of the common poultry problems. The descriptive matter gives the clinical symptoms together with the mode of discrimination and some of the means of control, while the tables contain summaries of the outstanding clinical symptoms and autopsy findings.

It must be remembered that this is only a working outline, showing only the salient symptoms and pathological changes encountered in these conditions.

Fowl Cholera—Avian Hemorrhagic Septicemia.

A disease of the fall and winter.

Incubation period.—From 12 hours to three or more days.

Symptoms.—Depression ; the face, comb and wattles usually become darkened and discolored ; there is increased thirst ; the respiration is increased and later labored ; some elevation of temperature ; complete prostration just prior to death sometimes death is so sudden no symptoms are manifested.

Symptoms and Lesions.—Drooping wings, lameness. (localized cholera) ; emaciation, (chronic cholera) ; diarrhoea, (white discharges) ; elevated temperature ; congested, deep-red comb ; congestion and hemorrhage of intestinal mucosa, congested lungs and kidneys : petechia on the heart.

Mode of spread.—The organisms are eliminated from the body through the bowel discharges, contaminating the soil. feed and drinking water.

Control—Strict policy of isolation of sick birds ; cleaning and disinfecting of houses and premises and the use of germicide in the drinking water. The treatment, of sick and well birds with immune sera, has been tried with success in some instances. Vaccination against the disease may produce a temporary artificial immunity, but conflicting results have been reported on this method of treatment (Kaupp.)

Fowl Typhoid (Klein's Disease).

A disease of the autumn and early spring.

Incubation period four to six days, and the duration of symptoms in fatal cases from four to twelve days.

Symptoms.—In the initial stages, the symptoms may be overlooked if the birds are not alarmed. The bird shows signs of dozing, and does not present the normal facial appearance if disturbed- the action of the head being of a nervous type. If disturbed the bird shows a weakness of gait. The bowel discharges are sulphur-colored and the temperature as high as 114°F. Loss of flesh may be rapid , affected birds may become partially comatosed ; and if sitting, the head may fall forward until the beak touches the ground: or the coma may be complete when the bird lies on its side with the head curved under its breast ; complete loss of the use of the muscles of the neck and inability to walk. The face, wattles and comb usually are highly anemic.

Autopsy Findings.—Grayish spots on the heart ; severe intestinal catarrh ; enlarged liver showing white spots ; spleen enlarged : kidneys enlarged.

Mode of Spread.—The infectious organism is eliminated in large quantities by bowel discharges ; contaminating soils; feed and drinking water. The disease may be introduced into a flock by the addition of new fowl or eggs, and by birds eating carcass of birds dead of the disease.

Control Measures.—Strict sanitation is to be recommended; all sick birds should be isolated or destroyed; and antiseptics should be added to the drinking water and the healthy birds removed to new grounds if possible. Epsom salts administered to the flock is commendable. The use of a bacterin prepared from the fowl typhoid organism or a combination of the typhoid and cholera organisms have given satisfactory results.

Tracheitis.—Infectious Bronchitis—Laryngotracheitis.

An acute infectious disease most common during the spring and autmn, especially at concentration points for shipping and in fattening batteries. This condition may spread very rapidly from battery to battery.

Symptoms.—A rattling sound may be heard in the region of the trachea or or bronchi. The affected bird will be seen to extend the head upwards with the mouth open gasping for air. Pseudomembranes may form in the mouth which may have the apparance of canker. As the disease progresses. the appetite is lost, fowl becomes dull and loses in flesh.

Autopsy Findings.—Hemorrhagic inflammation of trachea with an exudate and bronchitis.

Treatment—One grain quinine sulphate three times daily. Place the bird in *warm*, clean confortable quarters, free from drafts. Give plenty of clean water and soft feed such as bread or middlings moistened in milk, to which has been added two grains of blackantimony for each bird. Feed twice daily.

In the early stages, fhe disease may respond to subcutaneous injection of 3 c.c. to 5 c.c. of a solution of acriflavine, repeated once a day. (Kaupp).

Avitaminosis.

Vitamin A is a fat soluble vitamin and its absence from the diet results in a condition known as "nutritional disease." The development of this condition is rather slow. It has been found, by experiments, that it requires about 158 days to develop a typical case of nutritional disease, when the birds are fed on a diet entirely lacking this vitamin.

Symptoms.—There is a loss in weight; the comb becomes pale. the feathers ruffled, and the birds show progressive weakness. In the late stage of the condition, diarrhoea may be observed. the droppings containing considerable white material (urates). The eye usually shows improvement, which is manifest by a pronounced swelling; the exudate is white and does not have an offensive odor. This affection should be differentiated from ocular roup. in which ihe exudate is yellowish and accompanied by an offensive odor.

One of the most important diagnostic factors in this condition is the presence in the esophagus of small white or yellowish raised nodules of about the size of a millet seed. These may be few or many in number and located near the upper end of the esophagus or over the entire surface. The kidneys are usually involved in this condition. They appear large, pale in color and streaked with a network of white lines. The net work appearance is due to excessive urate deposit. In some instances the urates may be distributed thoughout the body and the surface of internal organs appear as if sprinkled with a white powder.

Autopsy Findings—White cheesy pustules in the esophagus and white deposits (urates) on the heart, liver and kidneys. There is congestion of the latter organs.

Treatment—This consists entirely in correcting the diet. This vitamin is present in large amounts in butter, yolk of eggs, green leaves, cod-liver oil, yellow corn, and good leafy alfalfa.

Polyneuritis.

Vitamin B. which is water soluble, when lacking in the diet, results in a condition in fewls called polyneuritis. It appears that the bird reacts much quicker to the lack of this vitamin, than to lack of vitamin A. It has been shown experimetally that birds will develop polyneuritis and die in 54 days when kept on a diet deficient in vitamin B.

Symptoms—The affected birds exhibit extreme nervous symptoms and inability to coordinate certain muscular movements. Sometimes a paralysis of the muscles of the neck develop. Eye lesions are lacking. The loss of muscular co-ordination is not so pronounced as in botulism or limberneck and the development is slower. The feathers present an unthrifty or unkempt appearance: the wings droop; emaciation ensues and the temperature is subnormal. There are no lesions of the abdominal or thoracic organs.

Treatment.—This consists entirely in correcting the diet. This vitamin is present in yeast, milk, green leaves, eggs, fruits and the coverings of most grains.

Rachitis.

Vitamin D, fat soluble, plays the all important part in the proper development of the bony structure of the growing fowl. A deficiency of this vitamin in the diet results in a lack of proper assimilation of lime salts which results in rickets.

Symptoms.—Swollen joints, lameness, stiffness, lack of growth, unthriftiness, weakness. walk a few steps and sit down, inability to walk and finally death. The failure of the bone to properly calcify may be due to lack of sufficient calcium or phosphorus with an undue amount of calcium or of vitamin D. There are no lesions of the thoracic or abdominal organs.

Treatment.—Vitamin D may be supplied in form or direct sunshine, cod liver oil, green feed or the ultra-violet lamp.

Coccidiosis.

A protozoon disease affecting fowls, rarely at less than three weeks ago. It appears that the greatest loss takes place between the ages of three weeks and six months.

Symptoms.—The chick is weak; feathers unkempt; wings droopy, due to muscular weakness; loss of appetite, or in some cases, birds may continue to eat. The droppings are fluid and of a whitish or whitish brown color and paste up the vent. The discharges may be streaked with blood. In the older chicks comb and wattles become pale. The adult fowl is less susceptible to coccidia infection, probably due to an immunity acquired by the ingestion of small numbers of oocysts.

In the adult fowl the disease usually assumes a far more chronic type. The fowl develops a gradual and progressive listlessness and loss of activity with emaciation. The comb becomes pale and the bird has periods of dejectien during which it stands in an isolated position. Appetite may remain normal or may be ravenous when fowls are aroused at feeding time. Leg weaknesses and paralysis may accompany the disease. Emaciation becomes marked after a time, there is a persistent diarrhea with bloody droppings. Death may occur in from one to three weeks.

Mode of Spread.—This protozoon is excreted in the fæces, contaminating the soil, runs or floors, also the drinking water and food. The infection takes place through the digestive tract.

Control.—One of the most important factors in the control of this condition is sanitation. This disease peculiarly lends itself to sanitary control due to the life cycle. If the chickens become infested with coccidia but once they will be rid of all the germs in 10 to 15 days. The organism does not continue to multiply in the intestines as many other infections do, but completes its cycle in a definite time and is passed out with the feces. Fresh droppings cannot produce the disease. The spores, which are the infective stage, are developed in the coccidia outside the body in 48 hours. Therefore, if by sanitation the cycle is broken at this point, the disease can be stopped.

Treatment.—The use of acidophilus milk; dried milk powder, to the extent of 40% of the diet; catechu 1/3 teaspoonful to each gallon of drinking water, or ipecac in same proportion; quinine sulphate 1/3 grain; bichloride of mercury 1 to 10 thousand, or phenoluslphonates with bichloride have given satisfactory results in the treatment and control of this condition.

Entero-Hepatitis.

A protozoon disease mostly in turkeys but does occur in chickens.

Period of incubation—Usually from 10 to 12 days.

Symptoms—The first symptom noticed in the poults, which are the most susceptible, is a lagging behind the flock, a sign of weakness. This is followed by more pronounced weakness as shown by the slow careful gait, drooping wings and a tendency to stand in one spot. Now follows a loss of appetite and also a loss of weight. No elevation in temperature. In adult birds, the symptoms are not manifest until the disease has progressed to a considerable extent. They appear dull, wings and tail droop, feathers ruffled and they sit around much of the time. Diarrhoea of the greenish yellow color sets in, followed by loss of appetite, and the bird gradually grows weaker and usually dies in from three to ten days after appearance of the first symptoms.

Mode of spread.—The protozoon escapes from ulcers in the ceca and passes out with the droppings to contaminate the soil, food and water, This contaminated food and water is the means of transmission. The infection usually takes place in the ceca, then extends to the liver, causing inflammation and degeneration of these organs.

Turkeys of all ages are susceptible to blackhead but the young suffer most. Cases seldom appear before the 13th day. The most critical period begins at about the thirty-fifth day after hatching.

Treatment.—In this condition, as in coccidiosis, sanitary control measures are all important. Do not allow young poults to run with older turkeys or chickens as there may be chronic carriers among the adult birds. On premises where chickens and turkeys have ranged for some time, it is advisable to yard the young birds. This should be done on non-infected soil if possible, otherwise cover the yard with about 9 to 12 inches of gravel.

Sulphocarbolates with bichloride of mercury give good results. The bichloride should be in a dilution of 1 to 20 thousand.

Hypodermic injections of tryparsamide, an arsenical compound, have been successfully used, the dose being 1 gram per kilogram of live weight.

"Veterinary Medicine", Vol. XXVII, No. 9.

CONTRIBUTION TO THE SYMPTOMATOLOGY AND THERAPY ON PIROPLASMA CABALLI.

BY

A. BERGTHAL,

Government Veterinary Officer, Department of Agriculture, Forestry and Fisheries, Palestine.

Recently numerous cases of an illness among police horses came under my notice, the disease manifesting itself in jaundice, indigestion, and a high temparature. The clinical appearances suggested the presence of some blood parasite, although such parasites could not be found after several blood examination. In the majority of the cases the suffering animals were countrybred horses, and this have been found to possess a more or less natural resistance to disease caused by protozoa. Only in this way could it be explained that numerous horses which became ill, with symptoms of slight fever, indigestion, colic, and yellowish discoloration of the mucous membranes, recovered without any treatment, or otherwise the disease lasted in the same stage for weeks, and even months. During the summer of 1931, a number of police horses in the Ramle division became sick, showing symptoms of icterus and high temperature, indigestion, sometimes accompanied by colic, which later on was diagnosed as *Piroplasma caballi.* Tick fever is known to exist, and to be widespread among the cattle of Palestine, and it can now be diagnosed and treatment instituted. This condition is seldom, however, ascertained in equines, as the diagnosis of equine piroplasmosis is difficult in local animals, and rarely can the existence of parasites in the blood be verified. The two forms of equine piroplasmosis known to exist in Palestine are *Nutallia equi,* found sometimes in horses, asses and mules, and *Piroplasma caballi* which is more rare. During the present year there was a great invasion of ticks in Palestine, and tick fever thus took a form more serious in character. The disease appeared and spread among the horses during the summer months from May to August, and even September.

At the onset of the illness a high temperature of 40-41·3°C., with a pronounced dullness, is notified. The animals keep in a corner. droop their heads, and tears ooze from their half-closed eyelids. If urged to move they walk lazily and with some difficulty, and frequently the gait is staggering. Oedematous swelling of the scrotum and that of the hind legs over the hind fetlocks has often been noticed, The conjunctiva and the visible mucous membranes become yellow. Icterus varies from a slight yellow to an orange-yellow colour, proportionate to the severity of the affection. Numerous petechiae are to be seen on the conjuntiva (*Membrana nectitans*) and in the mucous membranes of the nose and mouth, quite similar to that which are seen in petechial fever. Heart action in acute phases of the disease is greatly accelerated. The thorax presents signs of infiltration of the lungs, and the respiration is laboured and of the costo-abdominal type. Auscultation reveals intensified vesicular breathing rales, sometimes indefinite breathing sounds. From the beginning of the acute stage of the disease the appetite is depressed, whereas the thirst is increesed. At first there is constipation, during which the faeces are dry. Later they become softer, and constipation alternates with diarrhoea and colic symptoms. The urine is dark yellow in colour.

Courses of the disease :—After the initial rapid rise of the temparature, associated with an appearance of dullness, the temperature remains for some three to ten days at 40-41·3°C., whereupon in some cases it gradually returns to normal, or it becomes chronic. In this form it may last for weeks, and even extend over a period of several months, with main symptoms of chronic indigestion colic, emaciation, anaemia, and swelling of hind legs and scrotum. These swellings, and the haemorrhages on the mucous membranes often remain for some considerable time after disappearance of other symptoms. The animal shows an inclination to ingest sand. The majority of horses exhibit only a moderate temperature of 39-35.5°C., with diminished appetite. Slight yellow discoloration of all mucous membranes, as well as symptoms of indigestion, have been observed. In such cases the illness may pass even unnoticed, and patients recover rapidly after the disappearance of the described symptoms, or, as mostly happens, it makes a chronic course, and lasts for several months.

Diagnosis :—The disease may be recognised by the presence of marked icterus and fever, the recognition of which, however. is only possible by the demonstration of *Piroplasma caballi* in the red blood corpuscles, which in the cases observed by me were reported to be very rare. The following is a report received from the Government Veterinary Laboratory with regard to examinations carried out on blood of horses which were affected: "Blood slides received from you taken from the following horses ; Nos. 338, 303, 365 and 612, showed the presence of *Piroplasma caballi.* These were present in very small numbers, the most heavily infected showing about five or six parasites after prolonged search of several slides. In the other cases it was only after examining two or three films that a piroplasm could be domonstrated ".

It may be pointed out that the assertion of Descazeaux, that the severity of the illness stands in no proportion to the number of parasites in the blood corpuscles, and that it depends only upon their virulence, has been corroborated by the present outbreak.

Treatment :—The first treatment consisted of large doses of quinine sulphate 15-20 gr., which did not always prove successful, as many relapses occurred, and in some instances the temperature, after having dropped, would rise again. My attention was then drawn to a new remedy, which has a specific effect in piroplasmosis in cattle and is known as trypaflavin (3.6 diamino-lo methylacridinum chloride). Trypaflavin has been applied intravenously in an aqueous solution, 50 grammes of a 2 per cent. solution. The result of the treatment becomes manifested by the rapid fall of temperature and disappearance of the symptoms of dullness. It is also marked by the disappearance of the parasites in the blood, as confirmed by the laboratory examination. The temperature becomes normal, and an astoundingly quick improvement follows, Trypaflavin is injected into the jugular vein. The necessary amount is dissolved in sterile boiled water, and applied with a sterile syringe the excretion of the drug occurs within a few hours, through the urine, which assumes a yellowish.green to brown colour. Trypaflavin spreads in the organism in the same way as a vital dye, e.g., it colours almost all the organs, and therefore is also seen in the urine. Great care must be exercised with trypaflavin when injected intravenously that not even the smallest quantity should be injected outside the vein, as it causes extensive swellings of the peri-vascular tissues. Altogether ten horses were treated with trypaflavin, and the history of three of them is given as follows :

Horse No. 612 :—Country-born stallion, six years old. The horse was reported to be sick and not feeding. Jaundice, haemorrhage spots on the conjunctiva, temperature 41·1°C. Blood examination revealed the presence of *Piroplasma caballi.* *Treatment* :—On August 9th, 1931, an injection, intrajugular, of 50 c.c. 2 per cent. solution of trypaflavin. Temperature dropped by next morning to 38·3°C. The horse recovered completely.

Horse No. 365 :—Country-born stallion, five years old. Was reported to be off food on August 8th, 1931. Temperature was 41°C. Jaundice with haemorhagic spots on the conjunctiva. Blood examination proved that the horse was suffering from *Piroplasma caballi. Treatment* :—At the beginning consisted of quinine sulphate. No improvement being noticed, an injection of 50 c.c. 2 per cent trvpaflavin solution was administered. The temperature dropaed within the following two days to normal, and the horse quickly recovered.

Horse No. 338 :—Country-born stallion, nine years old, which was reported on July 20th, 1931, to be sick. Temperature 41·3°C. General jaundice and haemorrhagic spots on the conjunctiva and on the mucous membranes of the mouth. The horse appeared to be very ill. Blood slides examined in the Government 'laboratory proved that the animal was suffering from *Piroplasma caballi. Treatment* :—This consisted of an intravenous injection of 50 c. c., 2 percent, trypaflavin. The temperature dropped by next morning, and gradually became almost normal. A rise of temperature occurred on July 25th, due to an extensive swelling of the place of injection, but the animal recovered completely after one injection of trypaflavin.

In conclusion, it would appear that the intravenous injection of trypaflavin oonstitutes a very usefuiform of treatment in piroplasmosis of the horse due to *Piroplasma caballi.*

"*The Veterinary Journal,*" *Vol. 88, No. 7.*

ERRATA.

Page 10, Vol. IX, in the Scale given in the drawing of Poroce phalus species in the Muscle of a Fresh-water Fish. "Head," read 0·1 0·2. 0·3, and 0·4, instead of ·01, ·02, ·03, and ·04.

We regret we left ont the following paragraph in extracting the the article on "Diseases of Human Beings carried by Milk" by Mr. Thos. DaCosta, G.B.V.C., in our last number of July 1932. It should be read as sub-para 2 under paragraph 2 in Chapter 2.

"Thus the disease which are communicable in this way are the above stated animal diseases in addition to the three common ones, viz Septic sore throat, Scarlet Fever and Diptheria, and the usual human diseases such as Tuberculosis. Parathyphoid Fever, Epidemic cerebro-spinal meningitis, Small-pox and even Meas les'".

Page 29 Vol. IX. line 15, Read Ol. Terpentine, 1℥ for lo℥.
" " " 16 " Tr. Asafoetida. 1℥ for lo℥.
" " " last line," Liqr. Adrenaline Hydrochloride ½ oz for 1½ oz.

College News.

MADRAS VETERINARY COLLEGE.

List showing the names of students who graduated from the Madras Veterinary College in the special examination held in October 1932.

I.	Mr.	A. Subba Rao.
II.	,,	K. P. Balakrishnan.
III.	,,	G. Raghavan.
VI.	,,	B. K. Dasappa.
	,,	M. Sundararajan.

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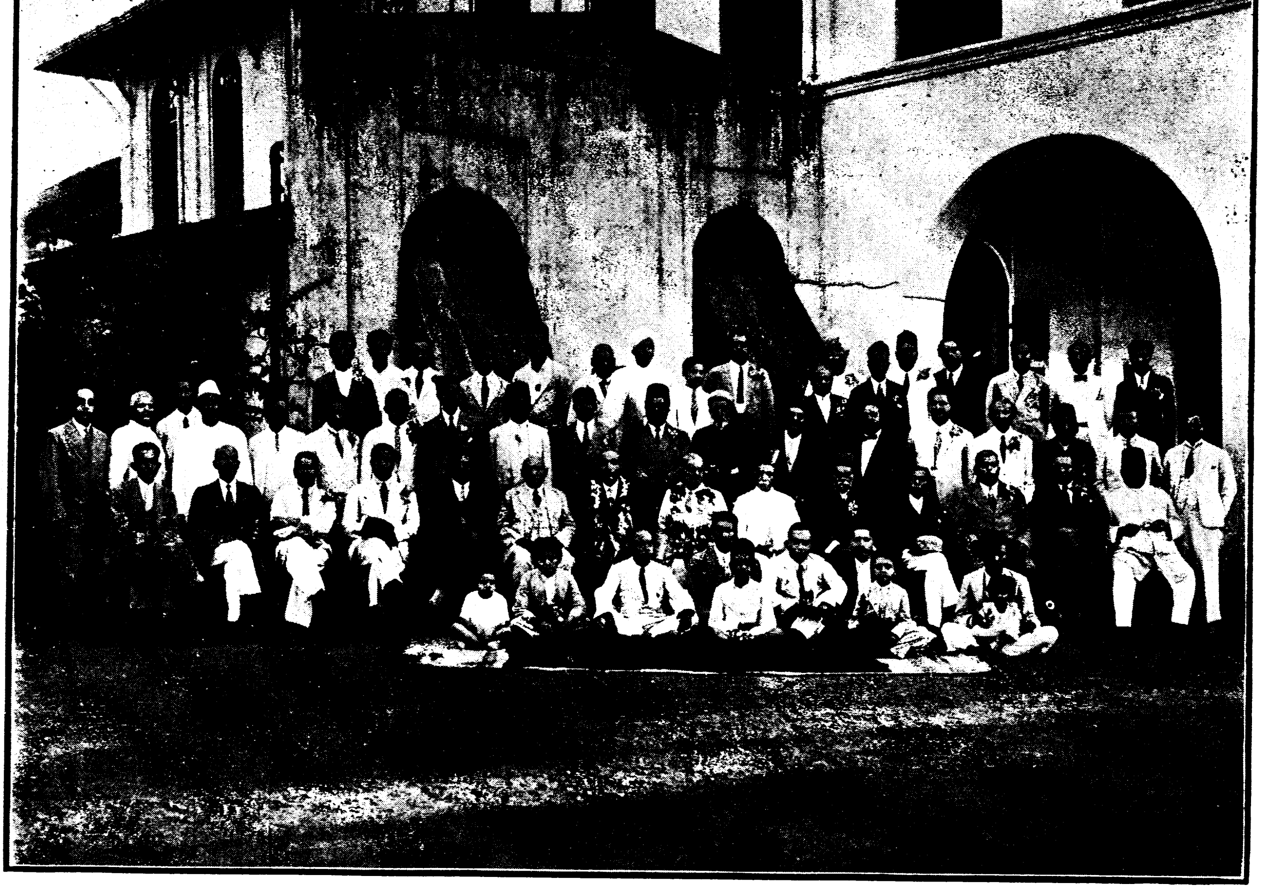

BOMBAY VETERINARY GRADUATES
"AT HOME"

IMP. AGRI
16. APR. 1943

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Editorials.

CIVIL VETERINARY SERVICES IN INDIA.

I

The history of the Civil Veterinary Services in India is comparatively a recent one; but even so, the progress achieved by the Civil Veterinary Departments in the various Provinces affords an interesting study. The need for these services has been widely recognised and strongly emphasised by the Royal Commission on Agriculture, which toured this country a few years ago; but to what extent the Provinces have adopted the recommendations of the Royal Commission to make adequate provision for the veterinary needs of this vast agricultural country is a matter of supreme importance. We have on previous occasions dealt with this question at some length and we make no excuse for adverting to it again. An analysis of the actual state of affairs relating to the Civil Veterinary Departments in the Provinces both before and after the visit of the Royal Commission on Agriculture would appear to reveal the deplorable fact that sustained efforts are wanting (barring one or two notable exceptions) to enlarge their scope and activities in proportion to the demand for veterinary aid in rural areas. It is no doubt true that owing to the general financial depression, at the present time, the normal working programme of the various utilitarian services under the Central and Local Governments have had to be curtailed or held in abeyance, but our complaint is that even in the best of times adequate provision has never been made available for the Veterinary needs. The Local Boards are entrusted with the burden and responsibility in most of the Provinces of financing the schemes for combating outbreaks of the deadly diseases of cattle, as well as for the establishment of hospitals and dispensaries so necessary for the treatment of ordinary ailments of thousands of working cattle on which thousands and thousands of poor people and agriculturists depend for their livelihood. That this policy has been to a great extent responsible for the stagnation and want of progress is evident from the fact that in Provinces where the Veterinary Department is entirely financed from the Provincial revenues and not dependent upon the precarious resources of the Local Boards for equipment and staff, the rate of progress has been fairly commensurate with the requirements for combating outbreaks of contagious diseases of cattle and for the establishment of hospitals and dispensaries on a progressive scale. The Veterinary budget should be a direct charge on the Provincial revenues, for it cannot be denied that the agricultural cattle are entitled to be protected against the ravages of preventible diseases by the State, the bulk of whose revenues is derived from agriculture. It may be that public opinion has not been sufficiently voiced on this behalf to stimulate action and accelerate the pace of development in the matter of making adequate provision for the Veterinary needs of India as a whole. We propose to examine in some detail what progress, if any, the Civil Veterinary Department of each Province has to its credit and begin with the Southernmost Presidency of Madras.

About thirty years ago, a separate department of Government known as the Civil Veterinary Department was constituted with a Superintendent in charge under the administrative control of the Board of Revenue, as it was found to be imperatively necessary to organise an adequate agency of properly qualified veterinary men to tackle the problem of prevention of the heavy cattle mortality occurring year after year. Two of the then existing Stock Inspectors who had been deputed to the Veterinary College at Bombay to qualify as Veterinary Graduates formed the nucleus to the cadre of Veterinary Assistant Surgeons. To recruit men to meet the growing demands of this new Service from the Colleges at Bombay and Calcutta, the pay and prospects were not attractive enough and the alternative was to open a Veterinary College at Madras. The Government decided to build and equip a Veterinary College for this Province and the Madras Veterinary College became an accomplished fact in 1904. The Superintendent, Civil Veterinary Department was also the Principal of the College and the staff consisted of an Assistant Principal and three Lecturers. The first batch of Graduates from this College came out in December 1906, and almost all of them were provided for in the Department. In 1909, a whole time Principal was appointed, so that the Superintendent may devote the whole of his time to the development of the Department. Improvements and additions to the staff and equipment of the College were made from time to time.

The curriculum of studies was revised in 1930, so as to include a wider range of training and a thorough grasp of the fundamentals of the basic Sciences. And to-day it is not too much to say that in the matter of staff, equipment, research work, facilities for Post-Graduate training and general standard of instruction, the Madras Veterinary College is second to none in India.

Proposals for the institution of a degree in Veterinary Science and the affiliation of the College to the Madras University are now under consideration. It is hoped that before long these proposals will materialise.

This College has been in existence now for a little over a quarter of a century and measured by the pace of progress for India as a whole in the matter of Veterinary Education, the Institution may justly feel proud of its advance. For the year 1912--1913, the total expenditure on account of the College was Rs. 40,132 and for 1930—1931 the amount was Rs. 132,688—a steady and sustained progress. All the available Graduates from this College year after year found employment in the Department and until so recently as 1928, the problem was to increase the supply: In their review of the administration report of the Civil Veterinary Department for the year 1927--1928, the Government have stated as follows:—" It is found that the number of available Veterinary Graduates is hardly adequate for the requirements of the Presidency. There has, however, been a slight increase in the number of students admitted to the College, and with the increase from 15 to 40 of the number of stipends tenable at the College sanctioned by Government recently, it is hoped that a greater number of students will be passing out of the College in future and that Veterinary Graduates will be available in greater numbers hereafter. Similarly with the recent grant of the increase in the strength of Leave Reserve it is expected that it would be possible for a greater number of Veterinary Assistant Surgeons being deputed annually to undergo the Post-Graduate Course...... In conclusion the Government note with satisfaction the enthusiasm and ability displayed by Mr. F. Ware, the present Director, Civil Veterinary Department, ever since he took charge of the Department, and trust that the comprehensive scheme of development and expansion of the department which he is inaugurating will be carried through with sustained effort to its fruition ".

This admirable forecast by the Government for the future expansion and development of the department has unfortunately been checkmated by subsequent events. At the present time recruitment to the Department is entirely suspended and of the Graduates who passed out of the College within the past year or two, very few have been taken into the Department. Unless the policy of expansion and development laid down in the Government order referred to above is resumed and given effect to at a very early date, the College will hardly attract a sufficient number of candidates to justify its continuance. It is scarcely necessary to reiterate the fact that private practice will not provide enough to keep body and soul together. Let us hope therefore that the Government will not reverse its policy of expansion and development laid down for the Civil Veterinary Department and that the Madras Veterinary College will continue its good work and supply Graduates to the growing needs of the Department year after year as in the past.

We will now turn our attention to the executive side of this Civil Veterinary Department and review its achievements. With the arrival of the first batch of Graduates from the Madras Veterinary College in 1907, it was found possible to open a few more hospitals and dispensaries, which could no longer be delayed, and with the regular annual addition thereafter, the subordinate staff of the Department in 1912-1913 consisted of seven Veterinary Inspectors and 65 Assistants. The superior staff comprised of a Deputy Superintendent and a Superintendent—the administrative head of the Department. Most of the Veterinary Hospitals and Dispensaries continued to be under the managemeat of the Local Boards. For combating outbreaks of contagious diseases of cattle, touring billets were established and each of the Revenue districts of the Presidency had one or more Veterinary Assistants to attend to outbreaks. In the absence of outbreaks each of these assistants did a certain amount of systematic touring in villages, treated cases and performed castrations. In 1912, the incidence of Rinderpest was so severe that a special Mobile Corps was formed with six Assistants in charge of a Senior Inspector for combating the disease.

In 1917-1918, there were 12 Inspectors and 113 Assistants on the the rolls of this Department and the number of Deputy Superintendents was increased by one. The Hospitals and Dispensaries increased to 40. The Department and the College which were under the administrative control of the Board of Revenue passed into the direct control of Government in 1917, and this arrangement enabled the Superintendent of the Department and the Principal of the College to correspond directly with the Government. During the next five years the expansion of the Department is illustrated by the following figures:—Imperial Service Officers 4, Provincial Service Officers 6, Subordinate staff 17, Inspectors and 161 Assistants, Hospitals and Dispensaries 51.

For administrative purposes and efficient supervision of the field work, &c., the Presidency was divided into four Circles, each in charge of a Deputy Superintendent and a Second Superintendent's Division was also formed.

Experience with serum-alone inoculation against Rinderpest showed that it was not possible to make any headway with the disease and it was therefore decided to try the Serum-simultaneous inoculation. To begin with, a few of the Government animals at the Agricultural College, Coimbatore, were successfully inoculated by this method in 1920. Since then its gradual extension and adoption to the exclusion of the Serum-alone inoculation against Rinderpest has justified the claims made for it.

The Local Boards were relieved of the management of the hospitals and dispensaries. Some important changes in the organisation of the Department were introduced in 1923-1924, as a result of the recommendations of the Retrenchment Committee. The 2nd Superintendent's Division was abolished as the Committee were of opinion that distinction between the work of the 2nd Superintendent and Deputy Superintendents was unnecessary and that the Presidency should be divided into Circles in charge of Deputy Superintendents working directly under the Chief Superintendent.

The Government also accepted the recommendations of the Retrenchment Committee for the abolition of the Grade of Veterinary Inspectors, as it was under contemplation to increase the Deputy Superintendents, circles.

Further administrative changes were introduced in 1926. The Chief Superintendent, Civil Veterinary Department, was appointed Veterinary Adviser which designation was later changed into that of Director and the Principal, Madras Veterinary College, who was till then independent of the Chief Superintendent was placed under his control, so as to place the whole Veterinary Service in the Presidency under one administrative officer. The number of Deputy Superintendents' circles was increased to six. In their review of the administration report for the year, Government observed "Six new dispensaries were started during the year. The total number of Veterinary Institutions on 31st March 1926, was 82, of which 5 were private Institutions. The number of dispensaries is still inadequate for the requirements of the Presidency. Since the close of the year, sanction has been accorded to the opening of six new dispensaries".

In 1929, the sanctioned cadre of Veterinary Assistant Surgeons was 246 and actually there were 239. Eight new dispensaries were opened. In the words of the Government review "the report (Director's) reveals progress in all directions of the Department's activities, the most outstanding of which is the adoption, especially in the latter half of the year, of the Serum-simultaneous method of inoculation against Rinderpest on a large scale and the consequent expansion of staff which has culminated in the re-organisation of the Department and the addition of five circles to the existing seven". In the following year, seven new dispensaries were opened and the number of touring posts was increased from 88 to 91. The campaign of S. S. inoculation against Rinderpest was in full swing, the number of cattle protected by this method was double that of the previous year.

In order that an adequate supply of serum for these inoculations may be made available locally at a cheaper cost, proposals for opening a Serum Institute were awaiting the decision of Government. Another notable feature was the decision taken by Government in the matter of Provinicialisation of the veterinary service, according to which there will be only one single Provincial Service in this Presidency carrying a pay of Rs. 250-25-550-25-750 with a selection grade of 10 per cent. of the cadre on Rs. 850-25-1000."

During 1930-31, seven new dispensaries were opened, making a total of 118, and the touring billets were increased to 97. The appointment of a Special Rinderpest Officer to enquire into the methods adopted for combating Rinderpest was also sanctioned. In pursuance of the question of opening a Serum Institute in Madras experiments were conducted with a view to ascertain if anti-rinderpest serum of required potency could be made during the hot and cold months. The results being satisfactory, the establishment of a Serum Institute was sanctioned with effect from April 1932.

We have endeavoured to portray the activities of this Department during the last twenty five years. And it will be clear from what has been stated that the avowed policy of expansion and development given expression to by Government in their periodical review of the administration reports of the Civil Veterinary Department was being kept in view and steadily pursued. But this policy is now in danger of being given up or reversed on the score of financial stringency. It is indeed sad to contemplate that the Veterinary Department which is admittedly of indispensable service to the Live-stock of the country and in the development of which the technical officers have given of their best and toiled for the last twenty five years and more, should be so ruthlessly brought under the retrenchment Axe, when it is but half developed.

We fervently hope that public opinion will assert itself to save the Department from any such disaster.

VETERINARY RESEARCH.

II

Healthy development and increase of Live-stock have been said to be a sure sign of a country's prosperity. They in turn may be said to depend on two important factors, viz., the right application of the knowledge of Genetics and prevention of diseases. Both these problems have not received adequate attention in this country. It may be that a few costly stallions and a few expensive Breeding Bulls from overseas have been introduced in India with a view to improve the live-stock, but how far the object has been achieved is a matter for speculation, more so, when no adequate steps have been taken to prevent such diseases as Strangles, Contagious Abortion, &c. A breeder may have learnt the right application of Genetics in obtaining a certain type of animals required for the needs of a farmer &c., but when he finds that his mare or cow "slips" what would have been a very good foal or calf, he knows that he has an insurmountable difficulty to overcome and he approaches a professional man for advice to prevent the loss and the latter too is not able to deal with it adequately. As far as we are aware no work appears to have been done on these diseases in this country. Some amount of work has been done on the prevention of such diseases as Rinderpest, Hæmorrhagic Septicæmia, Black-Quarter, etc., and from time to time newer methods of immunising cattle are being introduced. All these have saved the lives of many a valuable animal and thus have prevented a good deal of loss to the farmer or stock-owner; but the fact remains that as many "would be" valuable animals have not been given the chance of being born, on account of the prevalence of contagious Abortion. Contagious Abortion prevails in equines with disastrous results, and in addition many a valuable young foal has succumbed to "Strangles." It appears that very little work, if any, has been done on Strangles and one can stretch the point further and say that practically no work has been done in Equine contagious diseases prevailing in India, for want of necessary provision for Research into such problems, or for want of interest, which in our opinion, is the cause of the set back in Horse Breeding industry in this country.

There are at present, six Veterinary Laboratories in India, one attached to each of the five Veterinary Colleges in their respective Provinces, in addition to the Imperial Institute at Muktesar, and it is time that these Provincial Laboratories take up certain problems and work on them. It is too much to expect one Laboratory to tackle all the problems and our contention is why not take advantage of other Laboratories as well. So much is spoken of team work nowadays, but no attempt has been made under Veterinary Research to adopt that golden rule. This is a question which needs the immediate attention of the Imperial Council of Agricultural Research, and it is that body that should distribute work to different Provincial Laboratories.

With the above end in view, it may be feasible to call for a meeting of Research workers from different Provinces with their respective Departmental Chief at a central place and discuss with them their urgent local needs, chalking out in each case a rough line of Research to be pursued and indicating where to look up for help in cases of difficulties and above all providing the necessary finance so as not to hamper the workers.

Again the Provincial Laboratories may need a little overhauling in matter of equipment and staff. Right men must be found without fear or favour and they should not be unnecessarily saddled with other extraneous work. In a few other professional Colleges, Research work has been completely divorced even from teaching work to enable the workers to bestow their undivided devotion on the work on hand.

At present these Laboratories do a fairly large amount of routine work of examining and reporting upon materials received from the staff working in the districts and the College Hospitals, which is a necessary help in diagnosis, &c., but the amount of Research work done is comparatively negligible, which, in our opinion, is due to paucity of staff on the one hand and want of funds on the other. No Local Government will take the initiative to provide the necessary staff and funds, and the responsibility of obtaining these lies on the shoulders of the Departmental Head.

When once these Provincial Laboratories are overhauled and the work is distributed, it is not difficult to predict that the day may not be far off when contagious diseases of animals prevailing in India will be tackled in a manner which will at once be to the pride of the profession and the profit of the country.

UTILISE THE TIME AND NOT MERELY FILL IT.

Catch ! then, O catch, the transient hour ;
Improve each moment as it flies ;
Life's a short summer—Man a flower
He dies—alas ! how soon he dies.

Dr. S. Johnson.

What with the studied indifference of the Powers-that-be to the pitiable cries of the profession to improve its lot and what with the long shadows of the coming events of a future that threatens with dreadful disaster, we fear the profession is fast drifting on to despondency. It is our melancholy privelege, occupying the position we do, to notice the above mentioned fact in communications received and conversations held. We dread to think where it will lead to, It is a first rate tragedy that can ever befall on any scientific profession. The only remedy for this is certainly in the hands of a discerning Government. But in the meanwhile, is the profession to allow this rot to go on unchecked ? Are we to forget the interests of Science and Country's welfare in the midst of sorrow of the present hour ? Are not they too sacred to be sacrificed on the altar of grief ? Cannot the profession hearten up and continue to do its duty by the Science and the Country ?

A kindly friend has written to us that our proper place is the Pulpit and not an Editorial Chair. " Of what use are all of your sermons to a starving profession ? It takes all our time to keep away the wolf from our doors. Come down, Dear Editor, from your idealistic heights and teach us how to make bricks without straw!" We have no objection to vacate our Editorial Chair in favour of our friend and we only hope that he will help us to get the necessary ordination for the profession he has chalked out for us. We fear of being pursued even over there by our friend, who might then ask us to teach him to prepare amulets without breaking us ! We give no guarantee to undertake any such hazardous task. Our contention is that in the midst of all the cares, anxieties and worries of the profession, there is still scope for every one of its members to strive hard to contribute his humble share towards the advancement of Science. That can be achieved only by utilising every hour and not merely filling it. Will the profession remember it ?

RETIREMENT OF A DISTINGUISHED COLLEAGUE.

The name of Mr. M. Ramachandra Mudaliyar, Superintendent, Civil Veterinary Department, Hyderabad State, is not new to the members of the profession in India. He is due to retire shortly from the State Service, and an account of his Life-sketch is appearing in this issue from a friend. An outstanding personality of great merit Mr. Mudaliyar was only to be known to be liked and we dare say H. E. H. the Nizam's Government, the profession in the State and the public alike will miss him badly. Perhaps there is nothing in this world richer than the consciousness of work well done and Mr. Mudaliyar is blessed in that way. We join in the general prayer for his welfare and unalloyed enjoyment in his retired life.

Original Articles.

KUMRI.

BY

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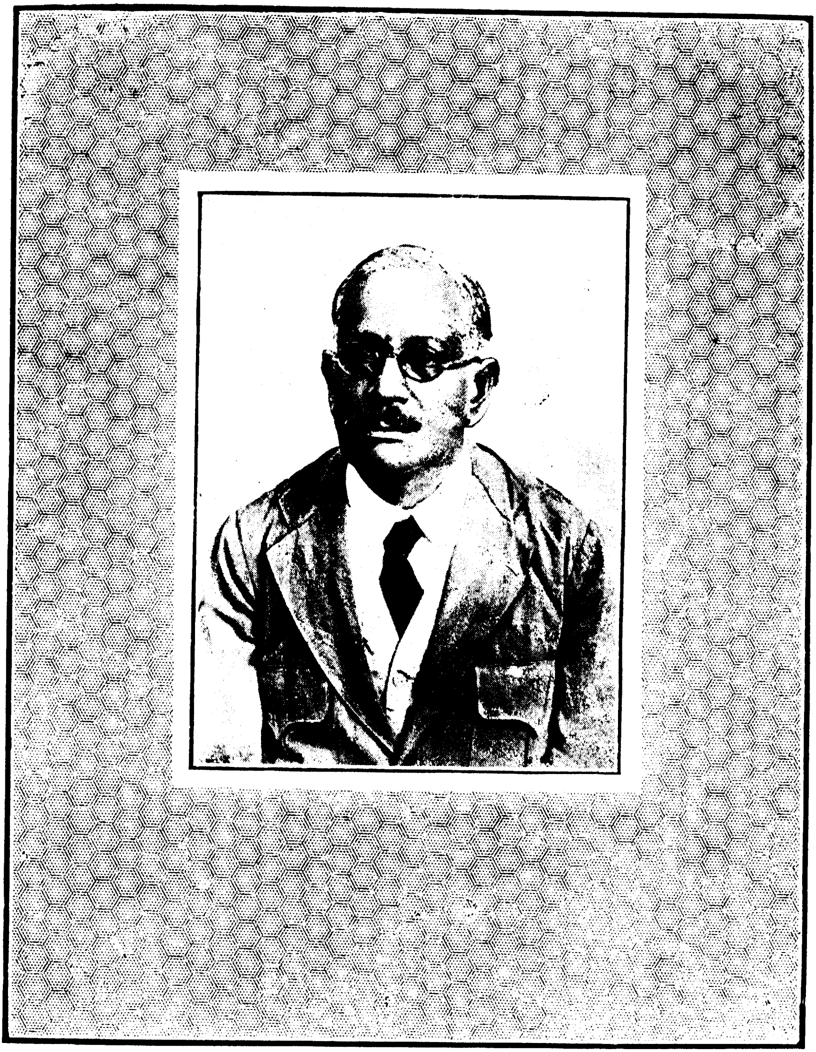
There occurs in many parts of this Province and various parts of India, Ceylon and Federated Malay States a rather serious chronic disease of horses, which is known as "Kumri." This disease is characterised, in a fairly advanced case, chiefly by loss of strength in the hind legs and irregular movements arising from defective coordination between the various groups of muscles. When the animal is standing the hind legs are held wide apart and the fore legs are carried back-ward to bear more than their share of the body weight. During walking the hind feet are lifted hesitatingly and incompletely from the ground, the toes being dragged and gradually worn or the heels coming first in contact with the ground, with the toe tilted at each step. At a trot the legs are swung outward in an attempt to clear the ground, while the hind quarters show the characteristic swinging, pointing to inability to keep the loins rigid. These irregular or ataxic movements are particularly well seen when the animal turns and if the horse is made to turn rapidly he may come to the ground. The animal has difficulty in backing, drags the toes along, and may come to the ground if backed quickly. In such cases pressure over the loins usually causes visible wincing and crouching.



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There is no wasting of muscles, no loss of sensation, no skin lesions suggesting trophic disturbances, no paralysis of the bladder or rectum —negative symptoms of great importance, as they help in differential diagnosis and show what parts of the nervous system are intact. In some cases there is marked disturbance in health.

The onset of "Kumri" may be explosive or slow. In the former case the horse may be unable to stand or may actually be found down in the stable and unable to get up. It is stated that after such an acute onset the condition may improve and the degree of paralysis attained may remain stationary for an indefinite period. In cases that develop insidiously there may be observed at first a slight dragging of the toes along the ground or just a perceptible flinch as the rider mounts. Such cases may—either proceed to any degree of incapacity before becoming stationary or they may progress steadily so that if they are not destroyed they reach a stage of complete paralysis when it is impossible for them to rise from the ground.

Kumri is said to occur very widely over the southern and South eastern portions of Asia. It has however a remarkably regional distribution. Thus in India it is restricted to certain provinces such as Madras, Assam, Burma, Bengal, Bihar and Orissa, and United Provinces (specially districts along the borders of Bihar and Orissa). Even in these provinces it is limited to such low lying localities and tracts as are liable to yearly inundation. Macalister states that the distribution of the disease is so curiously regional that whereas "in one area cases may be so common that few ponies of susceptible type brought within its radius will escape, the adjoining districts may enjoy complete freedom from the disease."

In addition to being regional the disease is strictly seasonal in its appearance. Replies to a questionnaire indicate that the majority of cases in Bihar make their appearance after the monsoon and that an increase in the number of cases usually follows a flood.

There appears to be a remarkable breed susceptibility in Kumri. The great majority of cases are usually seen in Australian Walers who appear to be most susceptible. Arabs come next in order of susceptibility. The country bred animals are said to be relatively immune but there is no doubt that cases among them do occur.

Evidence appears to show that bullocks and goats occasionally show weakness of loins very much resembling the one seen in Kumri horses. If that be so, it will lend further strength to the new theory of Kumri, because bullocks and goats are usually affected with schistosomes.

AETIOLOGY.

Ever since the earliest contribution to the literature on the subject was published by Gibb and Molyneux in 1828, the causation of Kumri has been the subject of study by various veterinary workers and a fruitful field for speculation by others interested in it. A century of such work has resulted in the elaboration of theories some of which are too fanciful to merit consideration, some which have strong prima facie support in their favour and others which are more vague and thus insusceptible of direct proof. The theories held at the present day may be conveniently classified as follows:—

1. The disease is due to some specific micro-organism of unknown type.
2. The disease is caused by unfavourable climatic conditions such as extreme cold.
3. The disease is due to some vegetable poison.
4. The disease is a form of filariasis.

SPECIFIC MICROORGANISM.

Suggestion has often been made that some specific microorganism or virus is responsible for Kumri. Investigators have however failed to find any microorganism by repeated microscopic and cultural examination of the various tissues, organs and body fluids of the affected animals. Further all attempts to transmit the disease by administering in various ways all sorts of material from Kumri ponies to healthy animals have been entirely unsuccessful. In the face of this contrary experimental evidence it appears that Kumri cannot be due to any bacterium protozoan or other virus which can be demonstrated by methods available at present.

CLIMATIC CONDITIONS.

The theory that physical causes such as extreme cold or high winds contribute to the causation of Kumri has been in existence for a very long time. At one time Kumri used to be called "Windstroke" suggesting thereby that high winds or continued draughts caused the weakness in the loins. This theory is obviously insusceptible of direct proof but the arguments usually given in support of it are (1) that such physical conditions have usually more influence upon—imperfectly acclimitised animals than upon indigenous breeds (2) that alteration in the structure of the stables so as to minimise the draughts reduces the incidence of Kumri (3) that conditions such as chill are still regarded by neurologists as being the probable prime cause of human nervous diseases of obscure etiology. It has however been shown that (1) the disease is well known in windless districts and windless seasons (2) that Veterinary literature has no record of Kumri in other parts of the world with the same climatic conditions (3) that alteration in the structure of the stables has no effect on the incidence of Kumri. Macalister stated that he found "in Kumri districts the most perfect stables with a very bad Kumri history and stables barely deserving the name with an absolutely clean record." In view of this evidence it would appear more probable that these external factors play, if at all, only a secondary part and that one must search for the causative factor somewhere else.

VEGETABLE POISONS.

The theory that Kumri may be due to ingestion of some poisonous matter contained in the forage seems to have originated from the suggestion in 1886, by Carlisle that Kumri may be a form of Rye grass poisoning. Later in 1897, Burke put forward the suggestion that the disease might be a form of lathyrism due to the consumption of fodder containing Khesari dal (Lathyrus sativa). At the present time there are many adherents of this hypothesis, no doubt because exclusion of the probability of other specific causes lends indirect support to this view. The direct evidence put forward in favour of this view is as follows:—

(1) It is stated by some observers that horses fed entirely upon fodder imported from outside the province do not suffer from Kumri.

(2) drying the fodder is also said to reduce the incidence of Kumri.

(3) the occurrence of the disease after a flood appears to point to moulds as being the causal agents;

(4) plants are known which have a direct poisonous action on the nervous system.

It will be shown later that the observation that Kumri has something to do with pastures and floods is quite a correct one and easily explained by the new theory. The interpretation that it implies the existence of a poisonous plant has however several obstacles in the way of its acceptance. The plant which has been difinitely suggested as having an etiological relationship with Kumri is Lathyrus sativa. Lathyrism has been recognised ever since the day of Hippocrates and its symptoms, both in man and animals are well known. For a long time it was Lathyrus sativa that was incriminated as the causal agent of this condition but Anderson, Simoensen and Howard have recently shown that this plant is not responsible for this condition in man and is quite harmless. They consider a weed called Akta (Vicia sativa) which grows in association with Lathyrus sativa as the probable cause of Lathyrism as they have found it to contain alkaloidal bases which are toxic to guineapigs, ducks and monkeys. H. Stot of Lucknow in a paper read at the 17th session of the Indian Science Congress at Allahabad described his experiments on Tonga ponies with Botanically pure specimens of Lathyrus sativa and Vicia sativa. At the end of four months and 24 days of continual feeding with these specimens he found the animals in excellent condition. From these experiments it would appear that even Akta cannot be held responsible for lathyrism in animals. Whatever may be the cause, the symptoms seen in equine lathyrism differ markedly from those seen in Kumri. Thus while in equine lathyrism the heart, the respiration and particularly the laryngeal muscles are also involved making tracheotomy sometimes necessary; such symptoms are significantly absent in Kumri. Further during post mortem examination of a horse dead of lathyrism one usually finds congested patches in the larynx and engorgement of the lungs and bronchi but these lesions are not met with in Kumri. Again the geographical distribution of Lathyrism does not appear to correspond with the incidence of Kumri. Thus it is stated that among the rice eating population of Assam lathyrism is practically unknown. Such inconsistencies of geographical distribution together with the differences in clinical features and postmortem lesions render it highly improbable that the cause of lathyrism, whatever its nature, plays any part in the causation of Kumri. If, in view of this, it is held that some other hitherto unknown poisonous plant may be the cause of Kumri one will still have to explain the apparent relative immunity of indigenous breeds, the apparent absence of mass infection in a stable, the notable absence of postmortem lesions usually associated with such poisons and finally the apparent arrest in the progress of the disease even when the animals not removed from the surroundings in which they are ingest the poison.

FILARIAL THEORY.

The Fialrial theory is quite an old one. From the writings of Gibb and Molyneux it would appear that the co-existence of Kumri and filariasis oculi had been observed a number of years before that date and that their etiological association was no new subject of controversy then. Even up to the present day this theory has remained the principal point at issue among various workers and there are many unquestioning adherents of the filarial hypothesis who talk of "ponies going in the back after worm in the eye", of "concealed filariasis" when no such worm is visible and whose dictum is "One worm in the eye means a bunch in the spine". The arguments brought forward in support of this theory are:—

1. that observers like Sartin, Adams, and Lingard allege that many Kumri cases give a history of ocular filariasis;
2. that many cases of filaria usually develop weakness of loins;
3. that observers like Place and Lingard allege that they have found the parasites at the seat of disease;
4. that there are cases of filariasis in dogs which are characterised by general toxic manifestations and specially in Great Danes by lameness of one of the hind limbs.

There are however some serious objections to the filariasis theory. Thus subsequent workers have failed to find these parasites in the eyes or other situations in many cases of Kumri. Macalister states that he killed many true cases of Kumri and on careful examination found that the majority of the cases had no filaria in the eye and no parasites in the spinal cord or other situations. The cases examined at this laboratory have also shown no history of ocular filariasis and no filaria have been found so far in the spinal cord. This is therefore an important disproof of the invariable association of these two conditions.

It has been found that filariasis occurs in many places where Kumri is not known. Thus filariasis is very common in the Punjab but Kumri is rare. Similarly filariasis is very widely distributed outside India, being found in Europe and America but Kumri has not been recorded from these places. Even in India filariasis is very widely distributed but Kumri is restricted to certain districts. This is another important inconsistency of geographical distribution.

Again Lingard's own work has shown that ocular filariasis is absolutely and relatively more common in country-bred animals, Kumri on the other hand is essentially a disease of imported horses. This is yet another inconsistency of racial distribution.

Further, although testimony is not lacking to show that other genera of helminthic parasites have toxigenic powers capable of producing nervous lesions the evidence in favour of assigning such properties to filaria is inconclusive. In fact it is well known that the filaria in a large majority of cases live in perfect harmony with their hosts and are actually regarded as the most innocuous of all helminths.

In view of such inadequate statistical support and glaring inconsistencies of racial and geographical distribution it would appear that the filarial hypothesis is untenable and the association between filaria and Kumri is nothing but a chance coincidence having no etiological import. Scientific literature is rich with parallel cases where two entirely independent diseases have co-existed to such a striking degree as to suggest a causal connection. Thus before the discovery of Trypanosoma gambiense, Manson regarded Filaria perstans as having some causal significance in sleeping sickness on account of its close correspondence in distribution with this disease. Similarly before the discovery of the cause of Kala Azar by Leishman the disease was regarded as a form of malarial cachexia because malarial parasities could be found in all stages of the disease.

THE NEW THEORY (SCHISTOSOMIASIS)

Work on Kumri has occupied the present author's time for the last year and it has now progressed to a stage at which it is considered that there is some justification for making the suggestion that Kumri may be nothing else but a form of equine schistosomiasis, the Schistosome responsible for the condition, resembling somewhat the Schistosoma indicum Montgomery, 1906. This suggestion is based on postmortem findings and the results of treatment adopted in few of these findings.

No previous investigator has recorded the findings of Schistosomes in cases of Kumri but considering the difficulty of finding Schistosomes unless they are specially "fished" for, this is quite understandable. At this Laboratory, however, special attention was being paid to these parasites because of our last year's discovery of the cause of Nasal Granuloma in cattle. As a result of this search these parasites were discovered in all affected cases, destroyed at the Laboratory. Treatment of the disease with tartar emetic (a well known specific in Schistsomiasis) was then adopted as a test of the tentative hypothesis formulated as a result of these findings. The results of this treatment have been encouraging enough to lend some support to the hypothesis.

The Schistosomiasis theory is further rendered more acceptable by the fact that it explains most satisfactorily all the features of the disease. The regions and seasons for Kumri provide just the conditions for snails which act as intermediate hosts in the life history of schistosomes. It is now easy to understand why all investigators have found it impossible to convey infection by ingestion and inoculation experiments. It is clear how pastures containing cercariæ are related to the disease and how drying of the grass by killing off the cercariæ helps in lowering the incidence of this disease. It is likewise easy to explain why Kumri occurs only in India and not in the western countries as the particular schistosome (probably Schistosoma indicum) exists only in these regions. This has a parallel in the case with Schistosoma haematobium which is very commmon in Egypt and Europe but is notably absent from India. The chronic nature of the disease is also in keeping with recorded observations on Schistosomiasis. Thus Manson states that cases of Schistosomiasis in human beings last for ten years or more. Further there is evidence to show that the symptoms seen in Kumri and even the characteristic nervous lesions alleged by Macalister to be present in every case of Kumri (author's final opinion concerning these lesions is held in abeyance pending examination of a representative samples of spinal cords and brains) can be caused by Schistosomes. From pathological and clinical studies on human schistosomiasis Fairely has shown that schistosomes and probably their ova exert their deleterious action on the tissues mainly by toxic action and that antibody can be demonstrated in the blood of infected monkeys and human beings by means of a specific complement fixation test. Tsundo and Shimaura have recorded a case of Katayama caused by Schistosoma japonicum in which during life the patient suffered from disorder of speech and tremor in both the upper and lower extremities with headache and mental disturbance, later vertigo and Jacksonian fits and finally right hemiplegia. Postmortem examination of this case revealed in addition to the lesions in the Viscera, hæmorrhagic infiltration of both the dura and pia mater, sclerosed areas and ova of Schistosomes embedded in the neuroglia in the brain in various places. Similarly William Mann has recorded his experience in which he has found symptoms varying from acute bronchitis to dementia precox, Jacksonian epilepsy and hemiplegia associated with the presence of Schistosoma japonicum.

The question has been asked whether the treatment now suggested will cure the disease. All that can be stated at present is that the treatment will certainly kill the parasites and the eggs and thus stop the progress of the disease. Recovery after that will depend upon the amount of damage done to the tissues and their ability to repair. As already stated Macalister believes that there are slight but characteristic degenerative lesions in the spinal cord in cases of Kumri. If that be so resolution meaning return to normal will depend upon whether the nerves have been destroyed or not. In the former case complete resolution would be obviously impossible but in the latter case recovery will occur in time. Particular attention is being paid at this laboratory to see whether Macalister's histological findings can be confirmed because should it be proved that there is no involvement of the central nervous system the prospects of the permanent cure of Kumri will loom large. The treatment now suggested will also give indirect confirmatory or contradictory evidence in this connection.

In the light of the present discovery one can suggest definite prophylactic measures. Thus inspection of the fodder and grazing grounds should be rigourously carried out and as far as possible animals should not be allowed to graze during the periods when Kumri is common. Attention should also be directed to the quality of drinking water, tanks and polls being avoided. It is well known however that such advice is "more honoured in the breach than observance" as the latter is admittedly not free from difficulties. Considering the small size of cercariæ and their abundance during season it is highly improbable that animals will escape infection. It would therefore be a wise plan for animals exposed to the danger to undergo a course of treatment with antimony so that the parasite will be destroyed before it has a chance to do irreparable damage in the system. Moreover as tartar emetic does not only kill the adult parasites but also destroys their eggs it would serve as the most valuable agent for completely preventing further multiplication of these parasities in the affected region. There is no reason therefore why systematic application of this medicine should not succeed in eradicating the disease from any affected area.

ACKNOWLEDGMENT.

Thanks are due to Major P. B. Riley, Director of Veterinary Services for his help in securing Kumri ponies for this investigation. Mr. R. T. Davis, Principal, Bihar and Orissa Veterinary College, has given me the benefit of his advice and constructive criticism at all times and has given me all possible facilities. For all this I am deeply indebted to him. Gratitude is also due to my colleague, Professor G. N. Roy Choudhuri who has placed all his clinical experience at my disposal and has carried out the treatment of an explosive type of Kumri in close consultation with me. The Veterinary Surgeons of the Province have shown a ready response to my questionnaire. Much is due to my assistants who have worked most patiently and enthusiastically throughout this investigation.

RAPID METHOD FOR EVAGINATING THE SCOLICES IN PARASITIC CYSTS*

BY

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Difficulty was being experienced in evaginating the scolices of parasitic cysts for the purpose of studying the suckers and hooks. Experiments were therefore carried out to find out a rapid method for this purpose. The cysts used for these experiments were Cysticercus tennuicollis and Cysticercus bovis, and the following methods were tried (1) Application of pressure to the caudal vesicle, (2) keeping the cysts in physiological saline at room and incubator temperatures, (3) keeping the cysts in diluted bile (obtained from a carcass) both at room and incubator temperatures, (4) keeping the cysts in dilutions of sodium taurocholate at room and incubator temperatures, (5) keeping the cysts in solution of sodium glycocholate both at room and incubator temperatures, (6) keeping the cysts in Ringer-locke solution at both room and incubator temperatures.

The pressure and Saline methods were found to be unsatisfactory. With Ringerlocke solution at incubator temperature (37°C) evagination occurred after a long time (30-48 hours) with diluted bile the evagination was more rapid and certain ; with glycocholate the evagination was less rapid than with bile ; with sodium taurocholate however the evagination was most rapid and the time taken seemed to vary with the concentration.

From these experiments it would appear that surface tension plays some part in the process of evagination under natural conditions.

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* Abstract of an article read before the 20th Session of Indian Science Congress, Patna, 1933.

DISCOVERY OF THE CAUSE OF NASAL GRANULOMA PRELIMINARY REPORT.*

BY

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The Etiology of Nasal Granuloma in Cattle has engaged the attention of Veterinary Research Workers for the last 10 years or so. Different explanations bave been given from time to time but the most plausible case has been made out by Prof. Krishnamurti Ayyar against an "Actinomyces like fungus" which is alleged to be present in the granulomatous growths seen in the nasal cavities. Work carried out at this Research Laboratory has however shown that the Actinomycotic theory is no longer tenable. As a result of the discovery of sections of schistosomes during histological examination of the growths, of the discovery of actual parasites in the fixed growths and during post-mortem examination, and lastly of the discovery of the characteristic spindle shaped eggs and ciliated embryos (miracid) in direct cover glass preparations of the nasal discharges from all affected animals, it is now announced that Nasal Granuloma in Cattle is a form of Schistosomiasis and that the species of schsitosome responsible for the condition is probably Schistosoma spindalis, Montgomery (1906). This Schistosome theory explains most satisfactorily the various observations made in connection with this disease, namely its regional and seasonal occurrence, the nature of the lesions, the unsuccessful attempts of previous workers at direct transmission and finally the uniformly successful treatment with tartar emetic.

ACIDFAST INFECTIONS IN CATTLE AND THE IMPORT OF THEIR RELATIONSHIP IN DIAGNOSIS.*

BY

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In connection with certain experimental work, two bullocks which were found to be infected with Johne's disease as a result of testing with Avian tuberculin and examination of rectal smears were brought up to Muktesar from Bihar in 1930. After a sojourn of one year at Muktesar, these two animals were destroyed for detailed *post mortem* examination. The result of examination of the tissues by culture, animal inoculation and histological examination showed them to be definite cases of tuberculosis, the original diagnosis of Johne's disease being still confirmed by the specific organisms in bowel smears in one case only. A further case was provided by the Army Remount Depot, Mona, in which a bovine was confirmed to be affected severely with both organisms since the lung lesions were definitely of miliary tuberculosis and the intestines were unmistakably affected with Jone's disease.

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* Abstract of an article read before the 20th Session of Indian Science Congress, Patna, 1933.

Although reports on double infections such as these are not at all rare in the literature, the general belief seems to be that these are quite infrequent in occurrence. The findings in these cases have been discussed, since these conjoint infections may be a disturbing factor in the correct interpretation of the diagonostic tests. The properties which this important group of organisms has in common, such as staining affinities, morphological features, cultural requirements, and reaction to avian tuberculin have been considered, to interpret if possible the frequency of double infections, such as the above cases.

HISTOPATHOLOGICAL STUDIES ON A CASE OF HELMINTHIC GRANULOMA OF THE EQUINE SKIN.*

BY

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The results of histopathological studies on what is believed to be the first case of helminthic granuloma of the equine skin to be discovered in this country are recorded in the paper. From an analogy with the findings in related conditions such as *Summer sores* in Europe, Esponja in Brazil, in which a verminous habronemic origin has been generally accepted, Bursati in India has been suspected to be due to a species of habronema (Sen, 1927) but confirmation has been consistently not forthcoming. The material for the present studies was provided by a specimen of tissue, removed from the neck of a horse and forwarded as Bursati lesions from Ferozepur. The histological findings in this case are of great interest, for, apart from the usual characters of Bursati tissue, namely, an inflammatory granulation tissue associated with pronounced eosinophilia, the capillaries and larger vessels have revealed a severe thrombo-angeities with the larvæ of a nematode worm enclosed in the thrombus material. The sequence of events in the development of individual lesions has been studied. The most outstanding and fundamental changes have been observed in the blood-vessels, the two extreme pictures of the lesions being a mild endothelial lesion and a pronounced "phlebolith" formation. The changes in this case at least were due to an infection contracted from internal sources since the blood-vessel lesions in general were noticed as advancing from inside out and because the parasites were invariably restricted to the inside of intact vessels.

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*Abstract of an article read before the 20th Session of Indian Science Congress, Patna, 1933.

Expert helminthological opinion was obtained from Mr. G. D. Bhalerao, M. Sc., who was inclined to consider certain spine-like processes on the worm as the striations or ridges characteristic of habronema larvæ.

ACTINOMYCOSIS IN A BUFFALO HEIFER.*

BY

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The subject of actinomycosis has received very little scientific attention amongst Veterinarians in this country and the general belief has been that the condition is not at all frequent. Although certain intractable diseases of animals in India such as Bovine Nasal Granuloma, Bursati and Bovine Lymphangitis were ascribed from time to time to streptothrix organisms, reports on genuine cases of actinomycosis of animals have been very few indeed. Pease (1891) described an outbreak amongst 11 buffaloes of various ages in the Punjab and Krishnamurti (1927) describes a growth on the shoulder blade of a buffalo and another in a bovine.

The present case concerns a buffalo heifer of Delhi breed belonging to a resident of Hyderabad, Sindh. The growths in this case were situated on the parotid glands of both sides of the neck, which were surgically removed and the case treated with Potassium iodide with apparent success. Histological examination revealed gram-fast mycelia in the centre of the "ray fungus" colonies.

This case has been considered as worty of report since actinomycosis in the buffalo has not been described before, apart from the two reports mentioned above and in order that the attention of field workers may be drawn to the occurrence of this condition in India.

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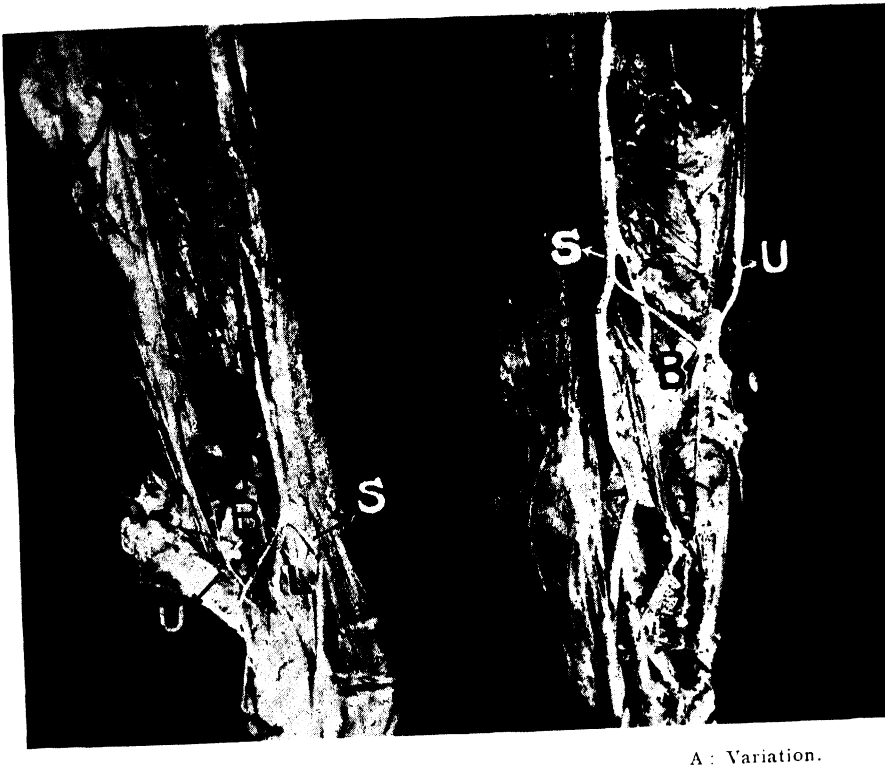
*Abstract of an article read before the 20th Session of Indian Science Congress, Patna, 1933.

Plate No. IX.

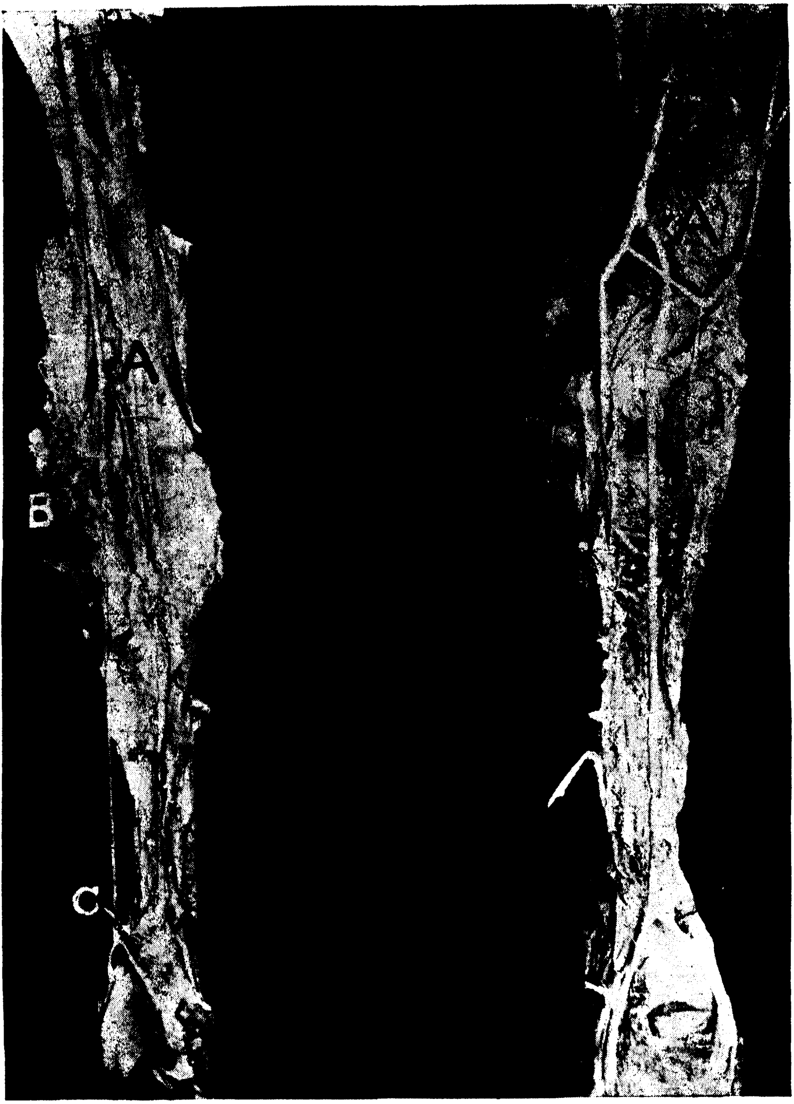


C : Normal.

A : Variation.

L. Large metacarpal artery.
S. Small metacarpal artery.
U. Ulnar artery.
B. in A. Branch of S joining U.
A in C. Branch of L joining U.

Plate No. X.



A. A: Large metacarpal artery.
B and C: Branches of large metacarpal artery.
B and C are found wanting in A.

Anatomical Section.

SOME PECULIAR ANATOMICAL FINDINGS IN THE HORSE.

BY

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Lecturer in Anatomy, Madras Veterinary College.

(Continued from page 122, No. II, Vol. IX.)

8. *Branch from the small metacarpal artery helping the formation of the supra-carpal or the superficial palmar arch* :—This arch is usually found formed by the anastamosis of the ulnar artery with a branch from the large metacarpal artery immediately after its origin from the posterior radial artery or from the posterior radial artery itself. But in the subject dissected on 25-10-29, this arch in the right fore limb (horse) was found formed by the anastamosis of the ulnar artery with a branch from the small metacarpal artery (Plates IX and X). The formation of this arch in the left fore of this subject was found normal.

9. *Want of the usual collateral branches of the large metacarpal artery* :—The large metacarpal artery has usually two unnamed branches. The first comes off at its (large metacarpal) origin from the parent vessel (posterior radial) and joins the termination of the ulnar artery to form the supra-carpal arch. The second unnamed branch is given off from the large metacarpal at or near the the point of its bifurcation into two digital arteries and it then divides into branches which ascend to anastamose with the interosseous metacarpal arteries. In the right fore of the subject dissected on 25-10-29, the two unnamed branches referred to above were wanting. A branch from the small metacarpal artery anastamosed with the termination of the ulnar artery and formed the supra-carpal arch (Plate X.)

A branch from the external digital artery took the place of the second unnamed branch of the large metacarpal artery. It is thus seen that in this particular subject and that only in one of the fore limbs the large metacarpal artery was not found detaching its usual branches.

The large metacarpal artery of the left fore limb of this subject showed the two usual unnamed branches.

10. *An additional branch on the digital artery* :—The digital arteries usually begin to give off collateral branches at the back of the digit but not above it. But in the subjects dissected on 14-10-26,

26-10-26, 22-9-27 and 25-10-29, external digital arteries of both fore limbs of each subject showed an additional branch immediately after its origin from the large metacarpal artery (Plate VII-A). This branch ascended, branched and anastamosed with the interosseous metacarpal arteries. In all the subjects in which this additional branch of the external digital artery was met with, the lower unnamed branch of the large metacarpal artery was wanting.

The digital arteries and their collateral branches in the hind limbs of these subjects were found normal.

General Articles.

PIROBLUE IN THE TREATMENT OF CANINE PIROPLASMOSIS.

BY

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The proper investigation in finding out the parasites of Canine Piroplasmosis and its successful treatment is long felt by many of our Veterinary practitioners. This disease is prevalent in Bengal mostly during summer and rains and the infection is conveyed by two kinds of ticks, viz. " Rhipicephalus sanguineous " and " Dermacentor reticularis " and in 10 to 20 days after tick bites, there is a rise in temperature followed by emaciation, anæmia, icterus, and in some cases cerebral symptoms. Various medicines have been tried for the treatment of this disease viz., Sulfarsenol, Tryparsomide, Novarsinobillon, Trypanblue, Atoxyil, S.U.P. 36, Quinoplasmoquine, Sodium antimony, etc , and we have very recently experimented on Piroblue in the treatment of Canine Piroplasmosis and we have obtained very good results. In this article I shall mention the following cases from my record book :—

Case No. 1:—An Alsatian pup, 6 months old, admitted in the Dog Ward of this College with the history that the pup was keeping a high temperature for over a week ranging from 104° F. to 106° F. The pup was not keen on its food and was very weak and emaciated and his visible mucous membranes were pale. His fæces were stained with blood and mucus and his urine was high coloured. The pup was infested with ticks and the examination of blood confirmed our diagnosis of Canine Piroplasmosis. 1 c. c. of one per cent. solution of Piroblue was given intravenously when the pup had a temperature of 105°F. The next day the temperature was found to be 103°F. On the third day 2 c.c. of the solution was again administered, and the temperature came down to normal on the following day. The appetite returned to some extent and light nourishing food was offered. General improvement commenced, the animal's appetite improved every day and with the nourishing food the pup recovered and was sent back to the owner within 10 days.

Case No. 2 :—An Airedale dog, three years old, was admitted in the Dog Ward with the history that the owner purchased him very recently from a gentleman while the animal was fully infested with ticks and was keeping an irregular temperature ranging from 102°F to 104°F. The general condition of the dog was very poor and very recently he had bleeding from the nose. 1 c.c. of Hemostatic serum was given immediately intravenously to check the bleeding. The examination of the blood revealed Babesia canis. 2 c.c. of one per cent solution of Piroblue was injected intravenously while the dog had a temperature of 103°F and on the next day the temperature came down to 102°F. On the fourth day the treatment was repeated and on the following day the temperature dropped to normal. This dog had relapse after a week and 3 c.c. of the solution of Piroblue was given intravenously. The blood was found free from parasites and the temperature remained normal for the next fortnight, when the dog was discharged while it was in the convalescent stage.

Case No. 3 :—A Spaniel dog, five years old, was admitted in the Dog Ward with the history that the dog was infested with ticks for a long time. The dog had still many ticks on its body when he was brought to the Hospital.

It kept a temperature ranging from 102° F. to 104° F. for about a fortnight before he was admitted as an inpatient. His liver and spleen were much enlarged. The mucous membranes were pale and there was also œdematous swellings on the extremities. Diagnosis of Piroplasmosis was confirmed on microscopical examination of the blood. It was given an injection of 2 c. c. of the solution of Piroblue when its temperature was 103°F. but the temperature remained unchanged. On the 3rd day it was again injected with 3 c.c. of the solution and on the following day the temperature was 102°F. On the sixth day another injection of 3 c.c. of the solution of Piroblue brought the temperature down to normal. The dog was perfectly alright after some little time and it was discharged cured.

Case No. 4 :—A Fox Terrier dog, six years old, was admitted with the history that the dog declined to take any food for over a week, and that it had diarrhœa and high coloured urine. The dog was keeping a high temperature ranging from 103° F. to 105° F. The animal was weak and emaciated and its spleen and liver were much enlarged. Several ticks were found on the body and on examination of blood Babesia canis was found. An injection of 2 c.c. of one per cent. solution of Piroblue was given when the temperature was 104°F. Next day morning, the temperature came down to 103°F. On the fourth day the dose was repeated and the temperature came down to 102°F. On the eighth day, another injection of 2 c.c. was given, and since then the temperature was found to be normal till the dog was discharged a fortnight later.

Prevention of the disease:—As one attack of this disease does not confer any immunity and the animal is liable to reinfection through tick bite, we should always try to exterminate ticks from the kennels and also from adjoining lands. Dogs should always be deticked. Bathe the dogs with Pot. Sulphurata, Soapex, Pulvex or Kurmange, which will prevent to some extent, ticks getting on to dogs.

Concluding remarks:—Piroblue is prepared by the Sandoz Chemical Works in Switzerland and the dose is 4 c.c. of a one per cent. solution in canine practice. The dose may be repeated once in two or three days, and according to the condition and progress of the patient 3 to 4 injections may be given intravenously. In case of tick fever in dogs, some other complications may arise and these should be treated accordingly along with the injections of Piroblue. Besides this, the question of careful nursing should not be forgotten. In combating anæmia in case of tick fever, Collosal Ferremalt, Collosal Calcium C, Vitamin D, Livadex or minced raw liver has proved useful.

Acknowledgment:—I wish to express my thanks to Major Hodgens, M.R.C.V.S., R.A.V.C., D.A.D.V.S., for kindly supplying me with Piroblue for use.

MILK IN RELATION TO PUBLIC HEALTH.*

BY

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> " The Public Health is the Fountain upon which rests the happiness of the people and the welfare of the nation."—*Disraeli,*

Fresh unchanged milk obtained under scrupulously clean and hygienic conditions from healthy and properly fed cows furnishes a food at once complete and thoroughly wholesome for both children and adults. It contains all the essential nutritive constituents of a complete food in most suitable proportions and as such approaches to being a perfect food nearer than any other single natural food. In infant feeding it is not, however, a perfect substitute for human milk to be used with impunity in its natural state without any previous modification, yet it constitutes the best subsitute. Physiologists and medical men all the world over recognise in it the one most indispensable food for children and invalids, because it supplies in a particularly convenient and usable form materials that they need.

The necessity and importance of milk as an article of diet is realised by all. What, however, is not realised by the general public in India is the importance that should be attached to the milk being clean. However valuable and rich in nutrive elements milk may be as a food in itself, yet, when it is carelessly produced, handled and distributed under uncleanly conditions, it may prove to be a source of serious danger to public health. Milk, even though fresh and clean looking, when obtained from an unhealthy, diseased or improperly fed animal frequently proves deleterious for infants, and is sometimes so for adults. And, when milk gets contaminated with large numbers of the ordinary saprophytic bacteria, which may have gained access to it directly or may have developed from those gaining access to it during the milking process or during its subsequent handling and storage, it becomes distinctly dangerous for infants, more particularly so in hot weather, but not very appreciably so for adults. It does not, however, mean that milk so affected is absolutely harmless for adults; it remains comparatively less harmful for them. Further, milk infected with the germs of bovine tuberculosis is very apt to transmit tuberculosis to children, but is much less likely to infect adults. The Royal Commission on Tuberculosis appointed in 1911 established that man is notably susceptible to consumption communicated from the cow. The following extract from their report will not be without interest :—

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* Reprinted from " The Red Cross " the Official Journal of the Indian Red Cross Society. Vol. VI. No. 4 Oct. 1932.

"The evidence which we have accumulated goes to demonstrate that a considerable amount of the tuberculosis of childhood is to be ascribed to infection of the bovine type transmitted to children in meals consisting largely of the milk of the cow.

"...........Bovine tubercle bacilli are apt to be abundantly present in milk sold to the public when there is tuberculous disease of the udder of the cow from which it was obtained. This fact is, we believe, generally recognised though not adequately guarded against. But these bacilli may also be present in the milk of tuberculous cows presenting no evidence whatever of disease of the udder."

Further, man is susceptible to several of the specific diseases of cattle, including tuberculosis, foot-and-mouth disease, anthrax, cowpox, rabies, etc. These diseases of cattle may be directly transmissible to man through the agency of milk. The milk of cows affected with these diseases should, therefore, be regarded as highly dangerous.

In foot-and-mouth disease milk secretion is reduced to a considerable extent ; the milk becomes thin, a little slimy, shows sediment after standing for some time and coagulates on boiling. Even a trace of the serum from the vesicles of the disease in cows renders large quantities of milk infectious. If infected milk is ingested, it produces headache, nausea, vomiting, diarrhœa and vesicles may appear on the lips, mouth, nose, etc. Such milk must be excluded. Boiling the milk, however, destroys the virus of the disease. In cases of anthrax, fortunately the milk secretion is suppressed, and as such the question of using the milk from a cow affected with the disease does not often arise in practice The milk, if secreted at all, is very little in quantity and is very much changed in its appearance. It becomes yellow, slimy and sometimes bloody with a bitter taste. Anthrax bacilli are passed out through the udder only in very advanced stages of the disease, but the chances of the milk becoming secondarily infected through the discharges and dung are very great. Milk from a herd in which anthrax is present must, therefore, be regarded as highly dangerous. Cowpox is a disease which manifests itself by vesicles and scabs on the cow's teats, and portions of these undoubtedly fall into the milk during the process of milking. The disease is closely related to smallpox of man. The milk during the course of the disease in the cow becomes thin, rather bluish and may even be nauseating. The disease may be transmitted by the milkers from cow to cow or through infected fodder and stalls, and from the cow to man through milk. If infected milk is given to children they may become affected with eruptions on the face. The virus of cowpox is destroyed at temperature of 48 degrees Centigrade. Heating the suspected milk to this temperature renders the milk safe. Cattle often get bitten by rabid dogs and become infected with the virus of the disease. Milk from such cows should be regarded as dangerous and excluded from use.

Furthermore, septic local affections like that of the udder (mastitis—inflammation of the udder), intestines (enteritis), uterus (metritis), etc., and many other suppurative conditions of our milch animals are caused by bacteria which are also pathogenic to man. In these affections milk often becomes unpalatable, for instance in cases of gastroenteritis, diarrhœa, dysentery, etc., milk from cows so affected becomes bitter, saltish or otherwise unpalatable. If milk of cows suffering from mastitis is partaken of by man, it is liable to set up sore throat and diarrhœa in them.

Again, milk may act as a 'carrier' of the causal organisms or virus of certain dangerous specific diseases of man. Outbreaks of typhoid fever, paratyphoid fever, dysentery, cholera, septic sore throat diphtheria and scarlet fever have often been traced to infected milk supplies, These diseases are collectively known as "milk-borne diseases" and are communicated to milk through human agencies only. Cows are not susceptible to these diseases. The milk-borne epidemics are generally explosive in character, a large number of cases occurring at about the same time, and the disease is found to be limited to those families only which have received milk from a certain dealer.

Typhoid fever, paratyphoid fever, dysentery and cholera are essentially intestinal diseases of man, and fæces and urine of patients or 'carriers' are the chief sources of infection. In the dissemination of these diseases in man infected milk stands second to water. The causal organisms thereto may gain entrance into milk by a number of ways: by contaminated water that has been used to wash milk vessels or to dilute milk fraudulently, by flies carrying infective material on their legs, or by convalescents of the diseases working as milkers or otherwise handling milk. The greatest danger is from those persons who carry disease in a mild form, the so-called cases of "walking typhoid, paratyphoid, dysentery or cholera."

Diphtheria bacilli are present in the mouth and nasal cavities of the persons affected with the disease, and may gain access to milk by their coughing, sneezing, loud shouting or direct contact. Septic sore throat epidemics have often been also traced to the infection of milk from cows suffering from streptococcic mastitis.

When an outbreak of any of the afore-said milk-borne diseases occurs, the suspected milk supply should at once be stopped, proper care of the patients taken, their fæces and urine properly disposed off and medical help immediately sought.

From the foregoing statements, it is clear that the relation and effect of disease in cows upon milk and subsequently upon the consumers is very profound and that public health is greatly influenced by the purity or impurity of milk supplies. The pollution of milk in the majority of cases is entirely due to the want of knowledge on the part of those who handle it. The contamination, or in other words, dirt and dust in milk, is not necessarily visible matter; it is dust accompanied by bacteria or microbes. Milk, as has been mentioned before, is a fluid which contains all the essential constituents of a complete food, and as such it is also a very suitable food for bacteria, and herein lies the danger of milk. When bacteria, phathogenic or non-pathogenic, gain entrance into milk, they thrive and reproduce at a very rapid rate, and hence milk which gets infected with disease germs rapidly becomes a powerful and dangerous vehicle of contagion for disease.

Dirt and dust, the chief carriers of germs, may gain access to milk in a number of ways: dirty conditions of the milkers' hands and clothes; dirty conditions of the cow's flanks, thighs, udder and teats; dirty methods of milking; dirty vessels; dirty conditions of the cow-shed, dairy and wash-house; dirty methods of transportation and storage of milk; flies, etc., etc. The cleanliness of the milk varies considerably according to the conditions under which the milk is produced.

The fact that milk may prove to be a source of great danger to public health, has led the health authorities in almost all Western countries to assume control of public milk supplies. This control is partly in the hands of medical men and partly under veterinarians and is strengthened by suitable legislation by the State of Municipal authorities. India is still very backward in this respect; very little has yet been done to bring the milk industry of the country under proper control and supervision. Whatever amount of milk inspection work is being done at present, is carried out by incompetent persons whose chief instrument of inspection is a lactometer. The difficulties in their way are also manifold. There are few food problems which are so complex and beset with great difficulties as that of furnishing a cheap and wholesome milk supply to consumers. This is particularly true in India where the general public, milkers, vendors of milk and others connected with the trade are all illiterate and primitive in their knowledge of scientific matters. The cattle are ill and underfed; they are housed under notoriously insanitary conditions; cleanliness which of so great an importance in the production, handling and distribution of milk, is practically unknown; useful and effective legislation is lacking; there is no general agreed policy—national, municipal or private to meet dangers of tuberculous and other kinds of harmful milk; consumers are indifferent towards obtaining a wholesome and clean supply of milk.

Any control must necessarily be binding and would mean expenditure. It would control the characters of land used for pasturage, the cultivation of fodder; it should determine the construction, location, ventilation and drainage of cattle-sheds and other necessary buildings; it should provide for abundant supply of pure and clean water; it must maintain cleanliness in the sheds; it must provide for the registration of milch animals, their periodic veterinary inspection to ensure a healthy condition of the herds; it must regulate the feeding of animals, the collection, handling, examination and distribution of milk; employees in the trade must be periodically examined medically to ward off the dangers of dissemination of the so-called 'milk-borne' diseases, etc., etc. In short, the solving of the problem of giving to the people a safe milk supply requires that the conditions at the seat of production, on the transportation lines, at the stores and in the houses be correct in all essentials.

Clinical Articles.

FOWL PARALYSIS (WRY NECK).

BY

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A case of " Wry neck " was noticed on 9th October 1932, in a hen at Andheri, a suburb of Bombay. For the sake of elucidation the number, age and their breeds and the condition of the birds under which they are kept is given below.

Indian Aseel (game) two pairs, one pair 12 months old, and the other 5 months.

Minorca Cockrel 1.

Nondescripts 30 (from 2 months to 1 year.)

Majority of the birds are home reared. They live more or less in semi-wild condition, running about over two acres of land the whole day and come to roost under a shed at night time. Some of them perched on the trees outside instead of in the shed.

NATURE OF THE GROUND.

Red earth, leaf mould, pebbles, flint, plenty of bushes and trees. Animal food and green stuff is in abundance. The land is not cultivated.

FEEDING.

Crushed dari seeds and legumes given *ad lip* morning and evening. Meat is given occasionally. No oyster shells or lime stone grit is supplied. A white non-descript pullet aged about 9 months was locally purchased in the month of May 1932 for hatching the eggs. When the hatched out chickens were about one month old, in the middle of July, this hen started laying at the rate of six eggs per week with seven days' break in the beginning of September. After that it started laying again at the rate of six or seven eggs per week.

The weight of the eggs was slightly below two ounces which is an extraordinary size for a hen of the common Indian breed.

The hen seemed to be in good condition as regards the body weight and plumage; but all of a sudden on October 9th, it was found standing in a corner and a bit drowsy looking and when frightened it ran away and joined the other chickens. On the morning of October 10th, it was seen standing with slightly drooping wings and wry neck, the neck having twisted to the right side. When approached it started walking with steady gait, but could not run fast and was easily caught.

Some injury to the neck was suspected; but on the examination of the neck and head no signs of injury could be seen. The neck could be easily turned to its normal position without causing any pain to the bird.

Microscopic examination of blood for spirochitosis and fowl cholera gave negative results.

In the evening the neck was held twisted to such an extent that one eye was directed upwards and the other towards the ground. In spite of the wry neck coardination in locomotion was not impaired; and it could feed from the ground by bringing the head down, slantwise.

Next day the condition got worse and the feathers of the head and neck got dirty owing to dragging the head on the ground. All the same it could walk and peck at the food every now and then.

It may be worth mentioning that during these few days of illness it laid two eggs of usual size and shape.

The case appeared quite extraordinary, because partial or complete paralysis of the legs and turning in or out of toes which are considered to be the usual accompaniments of fowl paralysis were absent and the predominant symptom was the wry neck, and slight drooping of the wings. The symptoms of fowl paralysis under intensive poultry farming may be due to various causes such as fermented food, deficiency of vitamin or even excess of vitamins (Vitamin B), internal parasites and absence or lack of indigestible grit (vide Veterinary Journal No. 6 and 7, Vol. 88). In some cases it is considered to be an inoculable disease.

In this particular case I could not hold the above mentioned causes responsible for the wry neck. The fowls had extensive ground to roam about, and they had access to plenty of flint, grit, green stuff and insects and worms, so the idea of vitamin deficiency and lack of grit was eliminated.

I could not hold the internal parasites responsible for these symptoms, because other chickens which were killed from time to time did not harbour many parasites in their digestive tract.

Considering the nature of the rum and the number and size of the eggs laid by this hen I was inclined to believe that it was due to deficiency of calcium. On this presumption it was decided to try calcium therapy.

Having still in mind the possibility of its being an infectious disease and being desirous of reaching some definite conclusion, one healthy pullet was given ½ c.c. of blood from the affected fowl intravenously and another subcutaneously on the evening of 11th October 1932.

All the birds were allowed to mix with the affected and the inoculated birds. The same evening the sick fowl was given intravenously 4 c.c. of a 5 per cent. solution of calcium gluconate.

The temperature of the sick bird was 105° F. while that of a healthy one was 105·8 F. Next morning the sick bird showed signs of improvement as regards drooping of the wings and the extent of wry neck. In the evening the bird showed decided improvement, the bend in the neck was less by half and it could feed from the ground quite easily. During the next two days it made an uneventful recovery and it started laying again from 1st September 1932.

Till the day of writing this article the inoculated hen continues to be in good condition and is laying. The other fowls as well are healthy.

CONCLUSION.

On the strength of a single observation perhaps it is too presumptuous to conclude that fowl paralysis is brought about by calcium deficiency.

However, as this particular case decidedly recovered after calcium administration I infer that this condition may have been due to Hypocalcimia.

AMPUTATION OF PENIS IN A BULL BY LIGATION.

BY

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A Grey Bull belonging to Mr. K.S. was admitted for paraphymosis at the Patna Veterinary College Hospital on the 16th July 1932, and discharged on the 3rd August 1932.

Condition of the animal :—The bull developed paraphymosis and remained in this state for over a fortnight. He was treated elsewhere and later the owner was advised to admit the animal here. The protruded portion was 18 inches long and was œdematous; there was laceration due to injury caused by striking of the organ by hind legs. As no bandage was put on, the penis looked swollen, wounded and a filthy mass full of mud, dirt, etc.

Treatment adopted :—After removing the damaged tissues measures were taken to reduce the condition, and when this was found to be futile, amputation was decided on.

Procedure of the operation :—The bull was cast, a metal mare catheter was introduced into the urethra and a rubber tourniquet was tightly applied just over the healthy portion of the base of the penis. The whole of the protruded portion measuring about 14 inches was below the tourniquet and the catheter was kept in position by threads passed through the two rings at its ends tied over the back and a square piece of bandage was placed below to support the organ and the catheter.

The bull experienced no trouble in passing urine as the catheter was included in the tourniquet. A careful watch was kept to see the flow of urine. On the 5th day after the application of the tourniquet, the protruded portion below the tourniquet with the catheter fell off and 4 inches of the protrusion immdiately returned into the sheath.

The wound of the penis was subsequently washed with Bin Iodide Mercury lotion (1 to 5000) and a suspensory bandage was placed over the sheath to keep the part clean and free from flies. At no time during the process of healing did the bull give evidence of pain or difficulty in urinating and in two weeks the wound healed and the bull was discharged cured.

By this method there is no danger of hæmorrhage, no inconvenience caused in micturition, no resultant stricture produced and there is no necessity of an anæsthesia during the operation.

DISTOKIA IN A MARE: ANTERIOR PRESENTATION, CARPEL FLEXION OF ONE LIMB.

BY

MOHAMMED DAOOD, L.V.P.,

Veterinary Officer, Government Stud Farm, Kunigal, Mysore.

Subject :—Sunama, Chestnut Indian Mare, ten years.

History :—The mare was a good and successful racer; and having finished with racing, she was taken into the mares' section as a brood mare on 5-7-29. She gave birth to a filly in 1930. On the 12th June 1931, she was crossed and held. On the 30th April 1932, or 322 days after service, she showed labour pains at about 9 P.M. Unlike before, she took a pretty long time, and at last a limb of the fœtus appeared. I gave the mare her own time, having asked all the attendants to keep away from her sight. The labour pains increased, but no avail. Having satisfied myself that it would not be a normal delivery, I decided at 11-35 P.M., to assist her.

Examination :—The mare was in a recumbent position, and was thus secured. Introducing my hand, I found that the limb that was partly presented was the fore limb, because the knee and the fetlock were bent in the same direction. Further up in the passage, I felt the head and the other limb bent up.

Delivery :—The presented fore limb was secured by means of a cotton rope and an assistant was directed to keep it just right enough. The head and the flexed limb were pushed well back, and when there was a little room inside, I examined if the foal was alive and it was found to be dead. Keeping the fœtus pressed back by means of a crutch, I introduced another rope with a slip noose, over the pastern of the flexed fore limb, and keeping the palm of my hand over that hoof, I pulled the pastern to straighten the limb, keeping the palm all along over the hoof to prevent any injury to the mother. This was carefully done in the intervals of the labour pains. The head was also brought to the normal position over the limbs, and with gentle traction to the head and fore limbs, the foal was delivered along with the after-birth. The mare was then given an uterine douche with Pot. Permanganus solution, and kept in a quiet box with plenty of bedding, green food and fresh water. She was also given a stimulant draught containing Spts. Ammon. Aromaticus. The douching was continued for a few days and she was given an electuary containing Quinine Sulph and Camphor to act as an ecbolic and antiseptic.

INCIDENCE OF HELMINTH PARASITES IN PARIAH DOGS.

BY

S. K. ACHARYA, G.B.V.C.,

From the Laboratory, Civil Veterinary Department,
United Provinces, Lucknow.

The present paper is the outcome of an investigation on the incidence of different types of helminth parasites in pariah dogs.

The investigation was undertaken under the direct guidance and instructions of Captain S. G. M. Hickey, M.R.C.V.S., I.V.S., Director, Civil Veterinary Department, United Provinces, Lucknow, and the material was obtained from the Lucknow Municipality, as a result of an arrangement with the Medical Officer of Health, for whose co-operation and help the writer is thankful.

The total number of dogs examined was fifty and the frequency of the different types of worms found on autopsy, are stated below:—

Serial No.	*Kind of worm.*		*Number of dogs affected.*	*Percentage.*	*Remarks.*
1	Ancylostoma caninum		49	98%	
2 (*a*)	Diplidium caninum (T. cucumarina)	11	27	54%	
(*b*)	T. serrata	8			
(*c*)	T. marginata	7			
(*d*)	T. coenurus	1			
3	Toxacara Canis		3	6%	
4	Spirocerca Sanguinolenta		7	14%	Found free in the œsophagus in 4 dogs and in tumours attached to the walls of the oesophagus in 3 dogs.

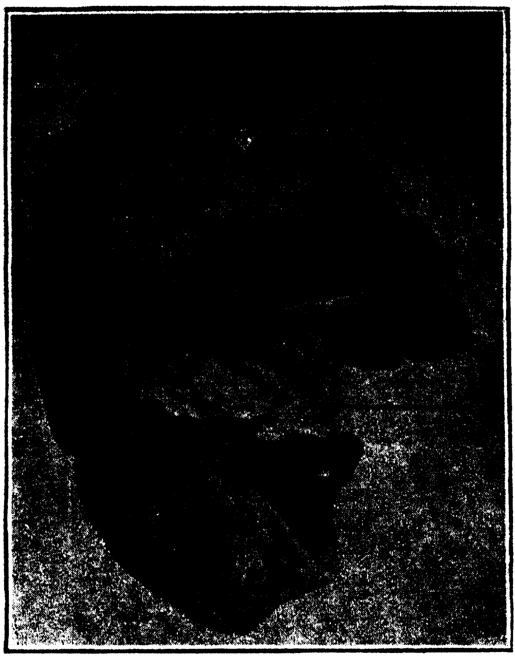


Fig. 1. Liver showing enlarged and caseated lymphatic gland (A)

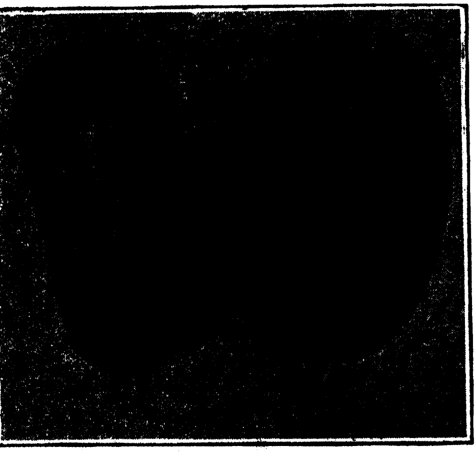


Fig. 2. Kidneys showing scattered miliary tubercles (A)

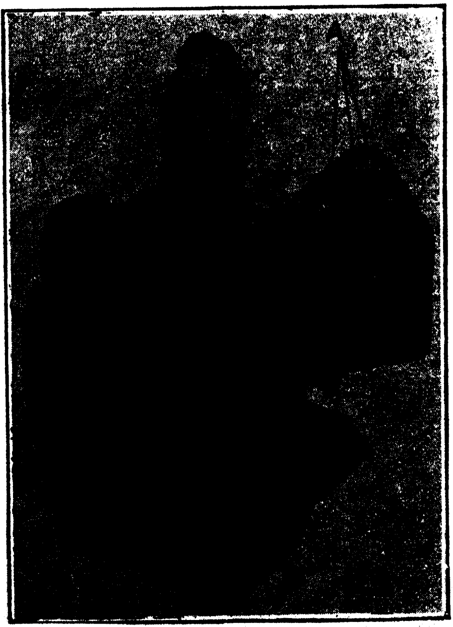


Fig. 3. Lungs showing Miliary tubercles (A)

A CASE OF TUBERCULOSIS IN A DOG.

BY

G. A. AJWANI, M.SC., D.V.M., D.V.H.,

Ag. Lecturer in Pathology and Bactriology, Madras Veterinary College,

AND

R. VENKATARAMA AYYAR G.M.V.C., AND M. NOOR AHMED, G.M.V.C.,

Pathological Assistants.

Subject:—A bitch, aged 6 years, in-patient No. 35, belonging to Mr. T. S. R.

History:—The animal was admitted for treatment as an in-patient at the Madras Veterinary College Hospital, on 5-4-1931, with the complaint that it was getting very thin gradually with sores all over the body which she kept on scratching. The clinical diagnosis was shown as worms and skin disease. The animal died on 17-4-1931 at 3-20 P.M.

Gross pathology:—The autopsy was conducted the same day at 4 P.M. The liver was found to be yellowish brown in colour and harder than normal. It presented numerous miliary tubercles when cut into. The hepatic lymphatic gland was very much enlarged and caseated (Fig. 1). Both the kidneys were yellowish in appearance and showed scattered miliary tubercles in their parenchyma (Fig. 2). Both the lungs presented caseating nodules and each about the size of pepper (Fig. 3). The mucous membrane of the intestines showed catarrh and revealed pin-point hæmorrhagic spots in places with a few *Diplidium caninum.* The stomach and intestines revealed no ulceration. The messenteric lymphatic glands were not enlarged.

The smears and sections made from the liver, hepatic lymphatic gland, kidneys and lungs revealed acid fast bacilli indistinguishable from tubercle bacilli. The tubercle organism could not be isolated to determine the type, as the materials were preserved in formalin. As the messenteric lymphatic glands were not enlarged, no microscopical examination of the same was done.

The case is interesting as this is the first case of tuberculosis in a dog recorded in the Madras Presidency, as far as we are aware.

TREATMENT OF CHOREA AND PARALYSIS IN THE DOG BY SULFARSENOL.

BY

BENJ. S. WHITE,

Veterinary Practitioner, Poona.

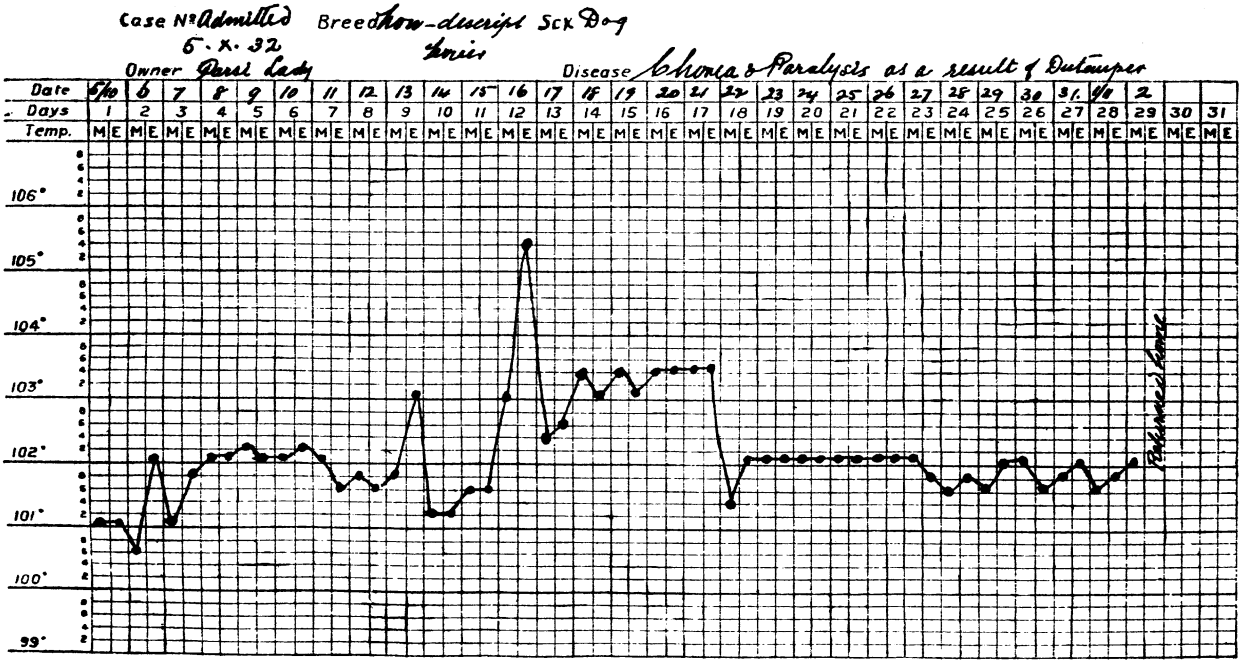
Patient :—A non-descript terrier, aged about ten months.

History :—This animal had recently suffered from distemper, which developed as a sequel chorea and later paralysis. The Chorea affected the whole of the body, i.e., head, trunk and limbs and the fore limbs were paralysed. The dog could lift its head only for a few seconds when it would fall down again. Defæcation and micturition was performed in the recumbent position and the food was taken in the same position.

This state of things existed for over a month, when the practitioner in charge of the case recommended its destruction. The owner, a Parsi lady, did not agree to this, and wanted to give it a chance, bad as it was.

She brought the dog to me for advice. I told her that I wanted to try Sulfarsenol treatment in progressive doses. She agreed to this and brought the dog for treatment. When I saw the dog and its condition I felt that I had made a mistake in not recommending destruction but having suggested the treatment there was nothing else to do but to carry it out, and the result was amazing.

5th	October, 1932.	1st	injection	0·03 cg.	No result.
6th	,,	2nd	,,	0·12 cg.	,,
8th	,,	3rd	,,	0·18 cg.	Slight local reaction in the evening and the animal attempted to rise.
10th	,,	4th	,,	0·24 cg.	No reaction. Choreic movement worse particularly in the abdominal region.
12th	,,	5th	,,	0·30 cg.	Animal showed some signs of improvement.
13th	,,				Placed on his feet he can walk with assistanee. but cannot rise without assistance.
14th	,,				Got up with slight assistance walked and micturated standing.
15th	,,				Can now stand without help for several minutes.



Remarks ;—Feeding-Buffalo milk, raw minced meat in morning. Midday, Biscuit, Evening, ¼ lb. Beef & Biscuit ¾ lb.
20th Milk only, 24th as per original feeding.

16th October, 1932.		Temperature 105.4°. Choreic movements less, later in the day the animal got up of his own accord and walked about without assistance.
17th „	6th injection 0·30 cg.	There is great weakness but the animal can rise of his own accord. Right hind and fore only showed choreic movements. The left side and abdomen showed no movements whatsoever.
18th		Choreic movement in right hind has disappeared to-day. Only right fore remains affected.
19th		Fæces inclined to be loose.
20th		Hæmaturia present. Gave saline diuretics.
21st		Continued diuretics.
26th		Doing splendid, can get up and walk well. Choreic movements toning down in right fore leg.
30th		Improving rapidly.
1st November		Choreic movement about the same in right fore.
2nd	7th injection 0·30 cg.	Going well, can run about a little. The animal was handed over to the owner so that it can have more freedom to move about. The owner was advised to bring it down weekly for injections.
9th „	8th injection 0·30 cg.	About the same.
16th „	9th „ 0·30 cg.	Right fore choreic movements much less, but showed up when the animal stands in one position for some time.
23rd „	10th „	Right fore remains about the same.
30th „	11th „	Not much improvement in the right fore.
8th December	12th „	The animal has improved generally, the movement in right fore is better.

The animal was discharged and the owner was informed that in course of time the movements in the right fore will disappear and no further treatment was necessary.

PARASITIC DYSENTERY IN BOVINES.

BY

S. SESHADHRI IYENGAR, G.M.V.C.,

Veterinary Assistant Surgeon, Chidambaram, Madras.

A peculiar kind of dysentery in cattle is observed in this place. During 1931, about 20 cases were treated during the months of January to November. During this year from July to the date of writing (October) some ten cases were met with.

Smears of samples of stools were submitted last year from some animals. Smears were negative. Fæces were declared to contain ova of Strongyles and Trematodes.

This year also fæces from one severe case were submitted and they were declared to contain ova of Strongyles and ova of flukes particularly Schistosoma spindale. The diarrhœa commences suddenly. There was no dung, blood clotted and mucus mixed diarrhœa. The animals became very much emaciated. Sometimes actual blood passes out.

I tried various kinds of treatment last year and the recovery was very slow.

This year, I started treatment from the beginning with oleoginous emulsions. The recovery was good and rapid. There was no mortality this year.

There were 3 deaths last year and I was able to conduct P. M. on one animal. Only gastro-enteritis was observed and fæces and ingesta were said to contain ova of Strongyles.

The peculiarity observed in this is that the affection commenced almost exactly in the same month.

PUERPERAL SEPTICÆMIA IN A BITCH.

BY

B. RAMIAH, G.M.V.C.,

Veterinary Assistant Surgeon, Parvathipur, Madras.

On 25-6-32 at 6 P.M., I was called to see a Spaniel Bitch which was labouring in agony after littering one pup. I hastened to the spot at once and found her lying prostrate with blood shot eyes and gasping breath. The abdomen was much enlarged. She gave birth to one pup at 11 A.M., from which time she had been suffering in that manner. On examination of the uterus I found one pup lying across the pelvis inlet in the dorso pubic position. This was set right and the pup gently extracted. A few more pups which could be easily reached were also removed. The pups in all now numbered five but the abdomen was still large and manipulation revealed the presence of some more. A warm antiseptic uterine douche was given and the following mixture was repeated four times at intervals of two hours during the night.

℞

Spts. Ammon. Aromat.	...	m. xx
Tr. Digitalis.	...	m. v
Liq. Ext. Ergot.	...	m. xxx
Acqua Chloroform.	...	oz. 1

Mft. mist. sig. every two hours.

The exhaustion was also met by the administratian of stimulant and nutritious drinks such as coffee, lactol, milk etc. By next morning she pupped four more all numbering nine by this time. This roused my suspicion to suspect some more pups which I did feel on palpation of the abdomen. The same mixture was repeated twice at intervals of two hours and at 12 noon by the aid of careful abdominal massage and slight interference two more pups were delivered. The pups now numbered 11. I then satisfied myself by further examination that there were no more.

In the evening the Bitch was very dull, unmindful of the pups, rapid pulse and breathing and the temperature rose to 105°F. The uterus was gently irrigated with 1 per cent. lysol solution which flushed out a piece of placenta. A saline enema was given and the following mixture was administered thrice during the night :—

℞

Brandy	2 dr..
Quinine Sulph	3 grs.
Liq. Ext. Ergot	20 m.
Acqua Chloroform.	1 ℥.

The next day the temperature was 104°F throughout. There was no improvement in her general condition nor did she take care of the pups but drank a little milk that was offered to her. The uterus was douched thrice with warm lysol lotion, and a saline enema given twice during the day. Four doses of the same mixture were administered alternated with another four doses of a diaphoretic mixture. On the 4th morning there was not a bit of improvement in the temperature despite the above treatment. It stood still at 104°F. The above treatment having failed and realising the situation was one of sepsis I gave an injection of Anti Streptococcus and Staphylococcus Vaccine which to my surprise and satisfaction had the desired effect of bringing the temperature down to 102·4°F. in the evening. No medicines were administered but the uterine douche and saline enema were continued. The next day the dog kept up the normal temperature and made a good recovery thereafter.

Notice of Drugs.

TREATMENT OF COCCIDIOSIS OF CATTLE WITH METHYLENE BLUE (MLB) *

Extract from an article by Amon Kowatsch,
Veterinary Surgeon.

A severe epidemic of coccidiosis was observed among valuable cattle stocks in Gleisdorf. The outbreak started among the yearlings and took a very violent course. Painful stools consisting almost only of blood were passed on the 2nd and 3rd day. The animals were unable to rise and refused the fodder. Treatment with Carbo-Medicinalis, Tannoform and quinine proved to be without avail. In the meantime, in spite of preventive measures, the disease spread rapidly when at last Methylene Blue (MLB) was recommended to me.

Methylene Blue (MLB) (Tetramethyl-thionin-chloride) is easily soluble in cold and hot water with an intensive blue colour. It is manufactured by Messrs. Bayer-Meister Lucius and extensively used in veterinary surgery in 1 to 3% solutions or as a 1 to 2% powder for external treatment of wounds. Furthermore, on occount of its bactericidal action, it is very useful in the treatment of infections of the gastro intestinal or the urinary tract. In the above mentioned cases of coccidiosis large quantities of a 0.4% solution were given to the animals as repeated rectal injections at body temperature 3 times daily. The quantity of the solution used for one injection amounted to ¾ of a gallon. Obviously, the administration was rather painful to the animals. So one has to take care that the enemata are kept for a few minutes at least.

Furthermore, every animal received 3 times daily 8 oz. of the 0.4% solution orally. On the 3rd day marked improvement set in. The animals fed readily; blood disappeared from the fæces which now showed a more solid consistency. Further enemata were stoped and oral treatment of Methylene Blue solution was continued for 3 more days only. Apparently the disease was cured after this treatment. However, after a few days' lapse, nearly all the animals relapsed severely. Blood was observed in the stools again. No further rectal injections were given. The treatment was continued only by peroral administration according to the above mentioned scheme. On the 3rd day again the animals were normal. However, to be on the safe side, peroral treatment was continued for further

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* **Manufactured by Messrs. Bayer-Meister Lucius, Leverkusen, Germany.**

8 days. Relapses were not observed afterwards and complete cure was effected.

Conclusion : Methylene Blue (MLB) seems to be a reliable and cheap remedy for coccidiosis in cattle when given by rectal and oral routes as a 0.4% solution.

MALIGN-CATARRHAL FEVER.

Recent experiments of veterinary surgeons show that the well-known antimalarial remedy, plasmoquine,* has a reliable curative action in malign-catarrhal fever. For a single dose 3 c.c. of the 1% solution are recommended.

Furthermore, it is claimed in the literature that "Bayer 205" (Naganol)* acts surprisingly well in the same indication. Naganol is to be given repeatedly in intravenous injections. Dr. Ellinger (Germany) prescribes 1 gm. of "Bayer 205" for every 100 kilo of body weight, to be dissolved in 30 c.c. of distilled water. The injection is to be given into the vena jugularis and has to be repeated twice with one day's interval. The action was highly satisfactory. Other workers inject 5 to 6 gms. of Naganol (Bayer 205) (according to the body weight of the animal) as a total dose intravenously distributed over several days.

An important note on the treatment of paralysis of hind legs as a sequelæ of canine distemper is given in the Veterinaermedizinische Nachrichten, (Bayer-MLB), No. 3. 1931.

Dr. M. (Veterinary Surgeon), says that in most of the cases of paralysis of hind legs as an after-effect of canine distemper, improvement and cure was brought about by the use of Tonophosphan*, an organic phosphorus compound in watery solution. He gave subcutaneous injections 3 to 5 c,c. of the ready made 3% Tonophosphan solution on alternate days. The doage was individual and according to the body-weight of the dogs. The dogs stood the injections very well indeed; hence prolonged administration was possible. In most cases, the paralysed animals came to normal conditions again after 3 weeks' treatment. Dr. M. claims that no other preparation gave similar successful results.

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*The preparations are manufactured by Messrs. Bayer-Meister Lucius, Leverkusen.

*Manufactured by Messrs. Bayer-Meister Lucius. Leverkusen.

Notes.

Readers may remember that in the issue of October 1931 of this *Journal*, we had published the "Government Review of the Veterinary Service in the Presidency of Bombay" and our reviews on the subject. We now understand that the reorganisation scheme contemplated in that review has been put into effect. The details of of this new scheme are not before us. We, however, understand that the designation of the Head of the Department has been changed from Superintendent into Director of Veterinary Services and Mr. E. S. Farbrother, M. R. C. V. S., I. V. S., continues to be the Head with the new designation. So far as this change is concerned, Bombay has come into line with most of the other British Provinces in India.

* * *

Under the new scheme the whole Presidency of Bombay is said to have been divided into three divisions corresponding with the Revenue Divisions, namely, Southern, Central and Northern. The Central Division has been kept under the charge of a Deputy Director—a new post—and Khan Sahib J. D. Buxy, G. B. V. C., who was a Deputy Superintendent in that C. V. D., has now occupied this post with headquarters at Poona. Whereas the remaining two divisions, Southern and Northern have been kept in charge of two Senior Veterinary inspectors, Messrs. V. N. Kulkarni and M. G. Kulkarni, respectively.

* * *

We fail to understand the justice of this half measure. They may say it is due to the present financial position. But these two Officers will be handicapped very much for want of the necessary status. Again an unimaginative Government might turn round and ask if work could be carried on with cheaper agency, why "Deputy Directors". We hope the Director in that Province will fight out the cause and promote his men to the Gazetted rank. Any scheme to import outsiders for such posts will spell disaster as the morale of the service will be seriously jeoparadised and rightly too—To boot, it will be injustice of the first magnitude with a capital "I".

* * *

The Director gets further relief in his Office work, as Mr. Y. N. Marathe, G. B. V. C., another Deputy Superintendent under the old scheme, has now been made the Personal Assistant to the Director of Veterinary Services. The P. A., to the provincial head of a *Scientific Department* should be a senior Technical Officer of Provincial Cadre of varied experience, so that he may be able to handle the several important problems that come up for consideration in the Central Office from time to time, in a manner befitting the responsibility and trust attached to the office. His administrative and professional experience should be such as to stand him and his Chief in good stead in solving many new problems and in chalking out new channels through which the Department can best serve the country.

* * *

All these aspects have been well considered by the older departments such as Medical, Engineering, Agriculture, with the result that the P. A., to the Surgeon General is a Senior Medical Officer of the rank of a Civil Surgeon, the P. A., to the Chief Engineer or Superintendent of Engineer is an Engineer, the P. A., to the Director of Agriculture is a Senior Agricultural Officer, the P. A., to the Inspector General of Police is a Senior Police Officer of Provincial rank. These examples are enough to prove the contention that P. A., to the head of the Scientific Department should be a professional man of experience and standing.

* * * *

Our local contemporary the daily " Hindu " of the 2nd December 1932, announced the formation and working of a " Rural Service League at Anantapur, in Madras Presidency. In response to our enquiry the League has favoured us with a printed copy of its rules. The object of the League is rural uplift and well being in Anantapur District and is strictly *non-political* in character. Educative Propaganda such as (1) Lectures, (2) Lantern Lectures, (3) Demonstrations, (4) Shows, (5) Exhibitions, (6) Conferences, (7) Publication of pamphlets, (8) Publication of a journal, (9) Reading rooms and libraries, (10) Vacation classes for rural workers and teachers, (11) Study groups, (12) Harikatha purana recitations, Bhajanas and co-ordination of the work of League with the various existing departments, Government and Non-Government, such as Education, Agriculture, Veterinary, Co-operation, Labour, Medical, Public Health, Maternity and Child Welfare, Industries, etc., are some of the means to be employed to realise the aim of the League. Such Leagues are most welcome and they should be formed in each district since they are of great potential good to the country. We therefore commend this scheme and wish it a long and useful career.

* * *

Every Veterinary Surgeon should be an active worker in such an organisation which is sure to popularise and advance the interest of the Science and the department in the rural areas, where colossal ignorance still reigns supreme. We find on the Provisional Committee of the Anantapur League the names of well known social workers and officers of different nation building departments. Its welcome feature is that the Lady Member of the District Board, Sreemathi Chilakur Lakshminarasamma, wife of the well known scholar and educationist Dr. Chilakur Narayana Rao, M.A., Ph.D., L.T., of the Ceded Districts College, is the convenor of the Committee. We are pleased to find our esteemed friend Mr. M. S. Sastry, G.B.V.C., General Secretary, All-India Veterinary Association, and his worthy Colleague Mr. P. K. Rangesa Rao, G.M.V.C., Touring Veterinary Assistant Surgeon of Anantapur, are among the founders and the active workers of the League. This League has already secured for the present a donation of Rs. 300/- from the Anantapur District Board towards the expenses.

* * * *

We find the Madras University Extention Board has arranged a series of Lectures on Civics and Economics by eminent men and women and the provisional programme which extends over a period of two months commencing from the 1st week of January 1933, has been announced in the local dailies. The provisional programme includes, Co-operation, Public Health, Industries, Engineering, etc. We are painfully surprised to find the absence of any subject connected with Veterinary Science in the programme. It could not be that the Board was not able to secure the co-operation of any eminent Veterinary Surgeons in Madras to deliver one or two lectures on the work of the Veterinary Department or importance of the Science in relation to urban or rural economics. It could never be that the learned Board failed to understand the close relationship between Veterinary Science and the Economical interests of this country. The omission is inexplicable. We, however, hope this defect in the provisional programme will soon be removed.

* * * *

We went through the Report of the Bengal Retrenchment Committee 1932. The section dealing with 'Veterinary' though only 2¼ pages in length has completely cut the ground off the profession in that important Province. The proposals are so retrograde that we feel no doubt about their being turned down by the Government with the active help of the Director of the Civil Veterinary Department, Bengal.

* * * *

Fancy the Committee saying "One Director, One Assistant Director, Five Inspectors and Six Veterinary Assistants are sufficient for epidemic duties and for the work of supervising the District

Veterinary Assistants". We don't know how the Committee arrived at this figure with such Mathematical precision. One thing we see and that is there are to be Seven of the 'Supervising Staff', and only Six Assistants in the epidemic field!

* * * *

That reminds us of the old Scotch army which consisted of "Three and thirty Pipers with two and twenty men". Perhaps the proposal is not so remarkable as the above army. They have the "District Veterinary Assistants" to supervise as well.

* * * *

Another illuminating proposal is to replace the present European Principal by an Indian on "considerably lower pay and without an overseas allowance". Nationality has no place in a Scientific profession and that on grounds of economy is nothing short of absurdity. It is sickening to go through that report and we only look up to the Government of Bengal to save the profession from utter annihilation by not giving effect to those heartless proposals.

* * * *

On Friday the 9th December 1932, under the auspices of the Debating Society of Bihar and Orissa Veterinary College, Professor P. G. Malkani, B.A., B.SC., (Lond.) M.R.C.V.S., gave a lecture on the "Etiology of Kumri". Hon'ble Mr. J. T. Whitty, I. C. S., Member, Eexecutive Council, Bihar and Orissa, presided. Many members of the public were present.

* * * *

Professor Malkani after discussing in detail the different theories and pointing out the obstacles in the way of accepting them announced that he had discovered Schistosomes in post-mortem examination held on Kumri ponies and had obtained encouraging results during treatment of Kumri cases with Tartar Emetic, which is a well known specific in Schistosomiasis. He also referred to the good results obtained by Professor G. N. Roy Chaudhuri in another case of explosive type of Kumri treated on similar lines which lent support to this theory.

* * * *

He showed that the new theory explained quite satisfactorily the various features of the disease which were difficult to explain before. By means of lantern slides he showed how the infection is probably conveyed to horses and suggested definite preventive measures to this end.

* * * *

Hon'ble Mr. J. T. Whitty, spoke about this disease as being a terrible scourge of horses. The disease was perhaps somewhat similar to human paralysis caused by Lathyrus Sativa or Khesari-dal.

He had always believed up to now that feeding horses on Khesari might in some way be connected with Kumri. Ever since he had been in this country, he had owned horses himself and some of the most valuable of them had died of Kumri and nobody had yet been able to find its cause or cure. The idea of horse-breeding at the Pusa Farm, had, he believed, to be given up on this account.

* * *

In concluding, Hon'ble Mr. J. T. Whitty, I.C.S., congratulated Mr. Malkani for his interesting and illuminating address and he felt that Mr. Malkani was on the right track or very close to it and if he succeeded in establishing the cause of this disease the cure will follow and Mr. Malkani will be a public benefactor. Speaking about the Bihar and Orissa Veterinary College he opined that such discoveries would do more to justify this institution than even the excellent training and educational work that was being done there.

* * *

We extract in this isssue from the "Indian Association Bulletin" Penang, an appreciation of Mr. R. V. Patel, G.B.V.C., who retired on the 1st of October 1932, from the important post of Assistant Veterinary Surgeon, Penang, after a distinguished career of 24 years in the service of that Government. We pray to God that he may be long spared to enjoy his well earned rest. His place has been taken up by Mr. B. D. Mehta, G.B.V.C., Assistant Government Veterinary Surgeon, Singapore, on the 12th of October 1932.

* * *

The Chemo-therapeutical line of treatment in Foot and Mouth Disease with intravenous injections of Lugol's solution, has been put to a fairly extensive Field test under controlled conditions at the Muktesar Institute and "it is considered that there is no justification for the use of Iodine in this disease, other than for its general tonic effects, for it appears to have no specific action on the virus of Foot and Mouth Disease, or at least not on the type of virus responsible for the natural outbreaks of this disease which occur in the Kumaon hills".

* * *

Well, the workers in the field in the Presidency of Madras have the same story to narrate with regard to this line of treatment.

* * *

Adverting to our Editorial in the last issue, "Mr. P. T. Saunders and University Affiliation", it would appear that what Mr. Saunders wished to convey was, that he was not against University affiliation, but that the process of effecting change should be gradual so that there may not be a dearth of qualified men for departmental work. Mr. Saunders was of the opinion that the question of replacing the present diploma by a degree could not be considered until some experience of it had been gained, especially in view of the recent change in the curriculum.

Correspondence.

To

THE EDITOR,

The Indian Veterinary Journal, Madras.

SIR,

Adverting to the extract that you have made in the last issue of the Indian Veterinary Journal page 163 on "The infectivity of milk and meat in Rabies" and the opinion of editor of I.M.J., that "Raw flesh, milk and meat would only be dangerous, and that only extremely rarely if there were *fresh* cuts or abrasions on the lips or mouth or tongue" (italics mine) the following from Edelmann's "Meat Hygiene" page 316 may be read with interest.

"As the meat of rabid animals is dangerous to health and unfit for food it should be condemned. Although transmission of rabies has not been observed from injestion of meat from rabid animals, the disease is neverthless possible if inoculation occurs while handling the meat. According to V. Ratz the virus of rabies remains active for 13 to 24 days after the death of the animal.

In the incubation stage of the disease, slaughtering of domestic animals......is not prohibited and the meat may also be utilized after removal of the the bitten area.

In accordance with B.A.I. order 211 Regulation 9 Section 2, paragraph 4 all animals showing on antemortem inspection-symptoms of rabies shall be marked "U.S. Condemned" and tanked for fertilizer".

RANIPET,
3-11-'32.

Yours faithfully,
P. THEAGARAJ, G.M.V.C.

Mr. M. RAMACHANDRA MUDALIYAR.

Superintendent, Civil Veterinary Department,
H. E. H. The Nizam's Government, Hyderabad.

To

THE EDITOR,

The Indian Veterinary Journal.

Before long, Mr. M.R. Mudaliyar, the head of the Civil Veterinary Department, Hyderabad State is due to retire after a strenuous career of nearly 32 years and it is but just to record in the pages of the *Indian Veterinary Journal* a short Life-sketch of that great member of the profession, who may rightly be described as the "Father of the Veterinary Services in the Hyderabad State".

Born of a very respectable Vellala family of Poona in 1879, he had his early education at Elphinstone and Rajaram High Schools in Bombay, where he was liked both by his masters and his class-mates for his sturdy, independence and his unfailing stand against all injus, tice. Finishing his High School career, he jointed the Bombay Veterinary College, against the opposition of his parents, as from the very early days of his life he had developed a liking for the Veterinary profession, which in later life he was destined to adorn and organise in a Premier State of a Prince in India.

Passing out in 1900, he was for some time an Inspector under the Glanders and Farcy Act in Bombay City, wherefrom he was selected in 1901, as the Inspecting Veterinary Surgeon in charge of H.E. H The Nizam's Stud Department, which post he held for 14 years, creating in the meanwhile more and more need for duly qualified Veterinary Surgeons and thus organising the Civil Veterinary Department of the State. Thereafter, he worked in various capacities in the Service of the State. In 1905, he was deputed as the Special Veterinary Officer, Hyderabad Exhibition and also as the Famine Veterinary Officer in connection with the purchese of cattle to be given to ryots on Takavi system in 1907. He was made a Deputy Superintendent in 1915, from which appointment he was elevated to the rank of the Superintendent of the Civil Veterinary Department in 1928. He was an examiner of the Veterinary Institute Hyderabad from 1916 to 1918.

Mr. Mudaliyar's charm of manners, gay disposition and profound knowledge made him a good Administrator to be implicitly obeyed and a delightful friend. To many a sub-ordinate he was a veritable Friend, Philosopher and Guide, who will be missed in years to come.

Being a Pioneer in the field in State Service, the work of publishing a few professional pamphlets and books for the benefit of the lay public devolved on him. Leaflets on "Surra"; "Epizootic Lymphangitis"; "Most Contagious Diseases of Cattle"; "Some common ailments of Cattle and their home treatment"; and the "Indian Materia Medica of most common indigenous drugs both for the use of Medical and Veterinary Practitioners" are works which will ever continue to stand to his credit.

Mr. Mudaliyar is retiring full of years and full of honours and he may rightly feel proud of having discharged his onerous duties to the satisfaction of all concerned. May he live long and enjoy his well-earned rest is the prayer of,

"A GRATEFUL VET."

To

THE EDITOR,

The Indian Veterinary Journal.

Sir,

The *Veterinary Alumni News*, No. 4, Vol. X, dated October 1, 1932, of the Kansas State College of Agriculture and Applied Science, Manhattan, U.S.A., gives the figures of enrollment of students in the Division of Veterinary Medicine for 1932-33, as follows:—

Preveterinary (first year).	15
Freshman (second year)	12
Sophomore (third year).	49
Junior (fourth year).	40
Senior (fifth year).	45
Six-year (Animal Husbandry and Veterinary Medicine).	3
Graduate	3
Total...	167

The Dean of the Veterinary Division states, "This is a slight increase in enrollment over the corresponding period of a year ago. It is very gratifying to the Veterinary Staff to have all these young men entrusted to their care for a period of five years. The loyal alumni and friends—who are largely responsible for the selection of this College by these young people for their Veterinary Division—will not regret the influence they have exerted."

Under the caption of Veterinary locations, the Dean sends an emphatic appeal to the Veterinary profession of America for the employment of the new Veterinary graduates. He states, "At the end of the present college year, in June, 1933, approximately 45 young men will be candidates for the Degree in Veterinary Medicine. Each of these will be looking for a desirable location. Recall your own days immediately after you left college and how you would have appreciated a little assistance at that critical time. Lend this help now, by reporting to the Division of Veterinary Medicine, the name of any community that in your opinion will offer possibilities for a recent graduate."

RAJAHMUNDRY,
November 26, 1932.

G. A. AJWANI, M.SC., D.V.M., D.V.H.

Extracts.

THE USE OF CHLORAL HYDRATE IN GENERAL PRACTICE.

BY

C. S. SHAWCROSS, M.R.C.V.S.,

Altrincham.

CHLORAL HYDRATE is well known as one of the most useful drugs in the surgery for a variety of cases, and would no doubt be more used if its administration were attended with less risk. My only object in writing this article is to call attention to cases in which the drug might be administered *per orom*, or by rectal injection, or taken by the patient voluntarily in drinking water or sloppy food. The use of the stomach tube in the administration of chloral hydrate is not always satisfactory in restive animals, and where possible nasal haemorrhage is likely to interfere with subsequent anaesthesia. Intravenous injection of chloral is not always practicable, as the type of case requiring treatment with this drug is often too rough to allow one to use sufficient care.

Case 1 :—Milk fever with meningitis ; temperature 109. Cow extremely rough bellowing, grinding teeth, respirations and pulse very rapid. Chloral hydrate, oz. ii, mixed with hot water and treacle, was injected per rectum, and cold water cloths applied to the head. In fifteen minutes she went quiet and sleepy, and the temperature had dropped to 106. The udder was now inflated, and a hypodermic injection of Calcium Sandoz given. In eight hours the cow was up and eating. and made a complete recovery. I have found chloral hydrate given as above per rectum is extremely useful in all cases of meningitis when it is too dangerous to give a drench.

Case 2 :—Recently I was attending a case at a farm, when a cow which was being brought up from the field jumped a barbed-wire fence, and tore one teat to, ribbons. Amputation of the teat was decided upon, and this was done in a hurry, as hæmorrhage was severe. The base of the teat was ligatured, and the teat severed below the ligature. The cow was so wild that it was feared that the owner would be unable to remove the ligature the next day without casting the cow, and as she was just at calving, this was undesirable. Two ounces of choral was left, to be given in a pail of water half-an-hour before he wished to remove the ligature. This was done without disturbing the cow in the least. Whilst still under the influence of chloral she both calved and cleansed. The usefulness of chloral in alleviating the pain of colic without interfering with peristalsis is generally recognised, and the above case proves that the labour pains of parturition are not impaired by its use.

Case 3 :—A horse which had turned savage and for two days no one had been able to enter the box with food or water. One ounce of chloral was dissolved in a pail of water and lowered into the box with a rope. The horse greedily drank the water, and fifteen minutes later quietly submitted to the adjustment of a bridle. He was led a distance of seven miles quietly, and was then slaughtered for lion food.

Chloral may be given in the above manner to both horses and cattle if water has been previously withheld, and a number of minor operations may be performed on restive animals prepared in this way without using much restraint. Chloral may also be given in this way as a preliminary to complete anæsthesia, and obviates the restlessness usually associated with chloroform when the muzzle is put on a horse in the standing position. In eversion of uterus in cows, I usually give a drench of one ounce of chloral mixed with treacle and water as a preliminary to returning the uterus. It not only prevents shock, but makes the cow easy to handle, and after reduction of the uterus the cow can be propped up in a comfortabie position, and left half asleep for four or five hours, after which she usually gets up little the worse for her experience unless there has been serious damage to the uterus.

" *Veterinary Journal*" *Vol. 88, No. 8.*

FOR RINGWORM.

Majur Elwood L. Nye, V.C., offers the following as " Another treatment for ringworm ".

" To each ounce of tincture of iodine add one and one-half grains of bichloride of mercury and shake well. This mixture is very easy to apply with a swab ; much more convenient than ointment ; penetrates rapidiy, and is therefore not mussy or greasy ; and above all, it quickly destroys any fungoid growth. The most advanced cases usually yield to two or three treatments which may be given about three days apart. The immediate effect is a slight cauterization. The skin is burned and a scab quickly forms, which is removed before the next treatment is applied ; and thus the caustic is carried into the skin sufficiently to reach all of the infecting organisms. The ease with which this treatment may be applied ; its cleanliness and prompt effective action make it a most useful agent in treating any parasitic skin disease ".

"Veterinary Bulletin", January 1932.

DIARRHOEA IN CANINE DISTEMPER.

BY

A. W. MILLER,

Harrisonburg, Va.

In cases of the intestinal form of canine distemper where the diarrhœa is persistent, I have had good results from the use of 10 to 20 c.c. of anti calf scour serum. Usually not more than two doses given with an interval of 12 to 24 hours between them, are required to stop the diarrhœa. The serum should be given subcutaneously and not more than 5 c. c. at one place. Of course, the usual aseptic precautions should be taken.

" *Veterinary Medicine* " *Vol. XXVII, No. 3.*

PROTOZOAN KILLS WILD DUCKS.

The number of wild ducks, greatly reduced by various adverse conditions, are being still further decreased by a disease caused by a little one-celled organism, a protozoan known as *Leucocytozoon anatis.* Wickware, Accordihg to a report received by the Bureau of Biological Survey, U. S. Department of Agriculture, from Dr. Earl C. O'Roke of the School of Forestry and Conservation of the University of Michigan. Doctor O'Roke has just completed his second summer's study of this disease at the University Biological Station, Douglas Lake, and elsewhere in Michigan.

This organism has a complicated life cycle. In certain stages it occurs in the red blood cells, and in others in tissue cells of glandular organs. The parasite is transmitted from duck to duck by the bites of black flies of buffalo gnats. Adult ducks harbouring the parasites are apparently little affected by them, but ducklings succumb in large numbers. Death of the duckling may occur at the time of the first appearance of symptoms, but usually it does not take place until the twelfth day after exposure.

The blood of a sick duckling is thin, pale, and watery, and contains numerous spindle-shaped parasites somewhat larger than normal blood cells. The most common lesion at autopsy is the greatly enlarged, blackened spleen.

"Veterinary Medicine" Vol. XXVII, No. 3.

NEW TYPE OF RABIES IN SOUTH AMERICA.

Kraus. R., and Duran, A. 1932. Ueber die in Sudamerika vorkommenden Epidemien der Hundswut bei Rindern und Pferden. (Epidemic rabies among cattle and horses in South America) Zeitschr. f. Immunitatsf. u. exp. Therapie 74 (½) : 182-199.

In Brazil, Paraguay and Argentine occurs an epizootic disease among cattle, horses and mules which is characterised by pareses and which is caused by a neurotropic virus. The demonstration of Negri-bodies in the brain, the infectiousness of the brain and the course of the experimental disease, especially in rabbits and in dogs and demonstration of Negri-bodies in the brain of these animals gives reason to the assumption that the cause is a lyssa virus. Since several factors seem to be against the idea that the classical street-virsus is involved, which is transmitted from the bite of a rabid animal, the assumption is justified to consider it a variety of the lyssa virus. In view of the already known varieties of the lyssa virus, it does not seem to be impossible that the virus of the "Mal de cadera de bovinos" forms a special variety. Further experiments will decide this question.

"Veterinary Medicine" Vol. XXVII, No. 10.

THE SIGNIFICANCE OF THE PITUITARY IN PARTURITION.

Heller, H., & Holtz, B. (1932) :—J. Physiol. 74. 134-146. 8 figs. 2 tables [30 refs.]

Dixon and Marshall (1924) suggested that pituitrin is secreted at the end of pregnancy under the stimulus of certain substances stated to have their origin in the ovary thus stimulating the uterus and leading to parturition. Other investigators, Bourne and Burn (1928) and Parkes (1930), have denied this, suggesting that some hormone sensitizes the uterus to the action of pituitrin.

The authors of this paper conducted experiments to determine the sensitization of the uterus by oestrin rather than by an increase in the amount of pituitrin in the blood. In addition they investigated the influence of the K/Ca ratio and anterior pituitary hormone to the isolated uterus, since alterations in both these factors are found in pregnancy. The experiments were conducted on the isolated uteri of guinea pigs.

Other workers had shown that previous treatment of the isolated uterus by pituitrin reverses the normal effect of adrenalin of relaxation to contraction. This method was therefore used for detecting changes in the activity of the posterior lobe of the pituitary during pregnancy.

Their main conclusions were that adrenalin relaxes the uterus during the greater part of pregnancy and stimulates it shortly before delivery. Protein-free oestrin (progynon) and crystalline oestrin have no sensitizing action for pituitrin on the isolated uterus. Protein-free preparations of the anterior lobe hormone prepared from urine (prolan or praehormone) sensitize the uteri of infantile and pregnant guinea pigs to pituitrin. Changes of the K/Ca ratio of the bath sensitize the uterus to pituitrin if K is predominant.

These results indicate that not only an increase in the secretion of pituitrin, but also an increased sensitivity of the uterus to pituitrin occurs at the end of pregnancy and that it may be an important factor in determining the onset and progress of parturition. These findings also suggest that, during the second half of pregnancy when the *corpora lutea* are degenerating and their inhibitory action is disappearing, labour is induced by a stimulus of a compratively small increase of pituitrin on a uterus. sensitized to its action by a combination of factors such as the increase of anterior pituitary and the alteration in the K/Ca ratio.—*J. R. M. Innes.*

" Veterinary Bulletin, August 1932. Vol. 2, No. 8. p. 470

I. Schoening, H. W, (1931). **Single Dose Rabies Prophylactic vaccination.**—North Amer. Vet. 12, No. 6, 45-46,

II. (1932). *B.A.I.* **Reports favourably on Single Dose Rabies Prophylactic vaccine for Dogs.**—Ibid. 13. No. 1, 8.

III. Schoening. H. W. (1931) **Immunization of Dogs against Rabies by the one injection method.**—Amer J. Publ. Health. 21, 637-640. [7 refs.]

I. Schoening considers that the results of the experimental work done warrant the use of prophylactic rabies vaccines, where rabies is a menace, but that the shortcomings of vaccination should be recognised. There is no 100 per cent. efficiency and the possibilities of the development of post-vaccination paralysis, though remote, should be recognised, Reliable field information on the use of the vaccine is lacking. Vaccination, no matter how effective, cannot by itself control outbreaks of rabies. The stray dog will always remain a factor which must be considered.

II. In an experiment carried out by the Bureau of Animal Industry, U.S.A., five dogs were given a single dose of vaccine and four were found resistant fourteen months afterwards to a dose of rabies street virus sufficiently active to produce rabies in four out of five control dogs.

III. The question of the one dose vaccine is discussed under three headings :—

(*a*) Dose it immunize ?
(*b*) Is it safe ?
(*c*) How long does immunity last ?

(*a*) The vaccines used were of two commercial types, one phenol-treated and the other chloroform treated, both of which are either killed or are so weakly virulent that they cannot produce the disease by subdural injection into rabbits. In an experiment, of I2 dogs treated with phenol vaccine and later exposed to street virus by intramuscular inoculation, five died of rabies, and in eleven controls nine died of rabies, showing a favourable difference for the vaccinated dogs.

Experience shows that failures are to be expected. The question of the plurality of types of rabies virus is discussed. The writer has one strain against which apparently little immunity in dogs can be produced. Using the chloroform-treated vaccine, nine dogs all survived exposure to street virus injected intramuscularly, whereas in the controls eleven out of thirteen were infected with rabies.

(*b*) The phenol-killed vaccine if properly prepared is incapable of producing rabies, but the question of post vaccinal paralysis must be taken into acceunt. The chloroform-treated vaccine, like the phenol treated, if prepared properly cannot produce rabies. No cases of paralysis have been seen in 180 dogs treated.

(*c*) The details concerning the persistance of immunity after vaccination are meagre. One case is reported which resisted infection one year after vaccination. The writer does not consider that the immunity should be considered to last more than one year.

The data concerning chloroform-treated vaccine are not available beyond four months.—*Norman Dobson.*

"Veterinary Bulletin" August, 1932, Vol. 2, Nos. 8, pp. 444-45.

POISONING OF LIVESTOCK BY PLANTS THAT PRODUCE HYDROCYANIC ACID.*

BY

JAMES F. COUCH,

Chemist, Pathological Division, Bureau of Animal Industry, Washington, D.C. (U.S.A.)

Many species of both wild and cultivated plants in the United States are capable, under certain circumstances, of developing hydrocyanic acid, also called prussic acid, which is highly poisonous. Such plants are known as cyanogenetic. Each year many enquiries about the possibility of livestock being poisoned by these plants are received by the United States Department of Agriculture. The following facts will enable livestock owners to recognize the danger when it exists and to avoid it.

Few Cyanogenetic Plants Fatal to Animals.

A great many plants are capable of developing hydrocyanic acid and may be responsible for poisoning, but under practical conditions only a few are actually dangerous. A list of those most dangerous by reason of their poisonous character and wide distribution is given below. One or more of these plants is found in practically every part of the United States.

Chokecherry (wild), *Prunus virginiana.*
Black cherry (wild), *Prunus serotina.*
Sorghum, *Sorghum vulgare.*
Johnson grass, *Sorghum halepense.*
Flax, *Linum usitatassimum.*
Arrow grass, *Triglochin maritima* and *T. palustris.*
Velvet grass, *Holcus lanatus,*
Christmasberry, *Photinia salicifolia.*
Sudan grass, *Holcus sorghum, sudanesis.*

Factors Affecting Quantity of Hydrocyanic Acid in Plants.

Hydrocyanic acid is not found in any appreciable quantities in healthy growing plants. The acid develops only when the normal growth of plants has been retarded or stopped by drought, frost, bruising, trampling, wilting, mowing, or other cause. Under such conditions hydrocyanic acid is formed by a chemical reaction between two substances, a glucoside and an enzyme, contained in the plant. Neither of these substances is poisonous by itself, and under normal conditions they are not in contact with each other. In damaged plants, however, sufficient hydrocyanic acid to poison animals is sometimes formed by the mixing of the glucoside and enzyme.

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* (Reprinted from the Leaflet No. 88, U. S. Department of Agriculture.)

The quantity of potential hydrocyanic acid that can be formed in plants may vary considerably with the stage of growth, climatic conditions, and soil. In general, mature cyanogenetic plants contain a smaller percentage of potential acid than do young plants. Plants grown on poor soil contain less than those on good soil, and fertiltzation with nitrates markedly increases the percentage of the acid. Sorghums grown in the Southern States have not poisoned the livestock so much as those grown farther north. The reason for the difference is probably climatic, but little is known about the exact causes of the formation of the poisonous acid in this case.

Dried cyanogenetic plants, such as those made into hay, commonly produce very much less hydrocyanic acid than plants which are fresh. Well-cured sorghum or Johnson grass, for instance, contains little or no hydrocyanic acid and may be eaten by livestock without danger of poisoning. It is thought that in some cases the poisonous acid is slowly given off during the process of drying and, being very volatile, passes into the air. In other cases some chemical alteration destroys the ability of plants to produce the acid, Some plants, however, retain a considerable proportion of the active acid even when dried. This applies especially to seeds. Dry immature flaxseed has caused hydrocyanic-acid poisoning, Dry rangoon beans, bitter almonds, peach kernels, and wild-cherry bark contain much potential hydrocyanic acid.

Preventive Measures Against Poisoning.

Even when they contain considerable quantities of potential hydrocyanic acid, the plants may not poison livestock. Since poisoning depends upon the presence of actual hydrocyanic acid, anything that prevents its development in the stomach lessens or entirely removes the danger of poisoning. Certain feeds, such as alfalfa hay and linseed cake, retard the production of hydrocyanic acid and may prevent poisoning. Glucose in the paunch markedly represses the rate of formation of the acid. It has been observed that cattle on a corn ration are less likely to be poisoned when grazing on dangerous sorghums than are cattle not fed on corn. It is therefore a wise precaution to give animals a starchy feed. such as corn, milo, or feterita, before allowing them to graze in the vicinity of plants capable of developing hydrocyanic acid.

An alkaline condition of the paunch also diminishes the rate at which the poisonous acid forms, and may even convert it into harmless products. But ordinarily it is not possible to bring about this alkaline condition as a preventive measure. If one animal shows symptoms of hydrocyanic-acid poisoning, other animals should be removed immediately from the pasture. It is commonly and probably correctly believed that the most dangerous plants are those that have wilted and in which hydrocyanic acid is already formed. When an animal eats wilted cherry-leaves, for instance, it receives ready formed a dose of the poison. When normal, unwilted cherry-leaves are eaten, the hydrocyanic acid must develop in the animal's stomach and be subject to the repressive influences previously mentioned. This accounts for some cases of poisoning from wild-cherry-leaves that have not been otherwise satisfactorily explained.

Symptoms of Hydrocyanic-Acid Poisoning in Livestock.

Hydrocyanic acid acts very rapidly, frequently killing the animal within a few minutes, although sometimes the poisoned animal may live for several hours after the symptoms develop. There is first a brief period of stimulation followed by depression and paralysis. Symptoms of colic often appear. Stupor, difficult breathing, and frequent convulsions result from the action of the poison on the brain centers that control respiration. Death is caused by respiratory paralysis, the heart continuing to beat for some time after breathing has stopped.

Quantity Sufficient to Cause Sickness, Usually Fatal.

If the dose is sufficient to sicken an animal it is highly probable that the animal will die. Six grains (0·4 gram) of pure acid is considered a fatal dose for the average horse. Cows are somewhat less susceptible. In one experiment a cow received 6 grains of pure acid and was made very sick but recovered. The fatal dose for the average cow would be somewhat in excess of this amount. Sheep are fatally poisoned on a dose of 1 milligram per pound of weight, or about 1⅓ grains for a 100-pound sheep. A moderate-sized dog may be expected to die if given 0·04 to 0·05 gram, which is one tenth the lethal dose for horses.

If a plant, then, contains as little as 0·02 per cent potential hydrocyanic acid, and if the animal consumes it all rapidly, 5 pounds of the plant would be fatal for a horse or cow and 1.25 pounds would kill a sheep, if no factors entered in to prevent the development of the acid. Under actual conditions, however, on account of interfering factors such as those already considered, those quantities will not always prove fatal. But since cyanogenetic plants may contain ten to twelve times as much potential acid as in the case just cited, it becomes evident that the fatal dose of these plants may be comparatively small and the danger to livestock correspondingly great.

Remedies.

No known chemical antidote to this poison can be relied on. Moreover, in the majority of cases hydrocyanic-acid poisoning causes death so quickly that there is not time enough to apply remedical measures. Various preparations have been recommended as having possible beneficial results. As the use of drugs themselves is attended by some danger to an animal, a trained veterinarian should conduct or supervise the treatment.

Oxidizing substances, such as potassium permanganate solution, given as a drench, destroy unabsorbed hydrocyanic acid in the stomach, and hydrogen peroxide slowly combines with the acid to produce a less dangerous substance. Glucose or ordinary corn syrup given as a drench combines with the acid to produce a harmless substance and, furthermore, retards the development of more hydrocyanic acid. A freshly prepared suspension of ferrous hydroxide in water, made by mixing equivalent quantities of copperas and caustic soda, converts hydrocyanic acid into relatively nonpoisonous substances (ferrocyanides) and so serves as an antidote. Remedies to be given by mouth, however, are generally unsuccessful after symptoms develop because by that time sufficient poison has been absorbed into the blood to produce death in most cases.

The fumes of ammonia breathed into the lungs may be effective both through their strong stimulating action and through the tendency of ammonia to convert the acid into less dangerous substances. Hypodermic injectfons of glucose, atropine, sodium sulphide, and sodium thiosulphate may be helpful if administered promptly.

COENURUS CEREBRALIS, OR GID, IN SHEEP.

BY

CHAS. GILLARD, M.C., M.R.C.V.S.,

Folkestone.

It was while practising at Ashford some years before the war that I became particularly interested in this disease. I then collected a series of very interesting photographs and records of a large number of sheep so affected. Unfortunately most of these have been lost, and I only have by me three or four photographs and occasional notes. My particular reason for choosing this subject is because I believe it has been much neglected by veterinary surgeons, and I should like to encourage members of the profession to devote their attention to the clinical aspect. They will find it remunerative, and even more interesting than the life history of the causal parasite, and will have the satisfaction of lessening the financial loss of sheep farmers. Practically all text books-discourage any treatment, and recommend early slaughter of affected sheep, whereas there are many hundreds of these cases which make ideal subjects for surgical treatment. "Gid" is also known under the names of sturdy, staggers, turnsick, etc., and in Kent, "pothery." It is a diseese which has been known as affecting sheep for at least some 300 years. In 1634, two Europeon surgeons discovered in the brain, on post-mortem examination of a sheep suffering from vertigo, "a vesicle filled with fluid." In 1780, Leske recognised the bladder as a cystic worm, but not until the middle of the last century was its true nature discovered, and tapeworm heads found. In 1852, Seibold proved that the bladder worms when fed to dogs developed into mature tape worms in their intestines. In 1853, Keuchenmeister demonstrated that tape-worm eggs from dogs, when fed to sheep, produced bladder worm in their brain and spinal cord. These observations were afterwards confirmed by many workers, and so it was established that the *Tænia cœnurus* of the dog and the *Cœnurus cerebralis* of the sheep were the larval and adult forms respectively.

Statistics quoted in various text-books agree more or less as to percentage of sheep attacked, *viz*., in the first year of life from 2 per cent. to 5 per cent., in the second year, 1 per cent. to 1½ per cent., afterwards only occasional cases. But these figures do not take into consideration the occasional outbreaks, when anything from 15 per cent. to 35 per cent. will be affected. These numbers in themselves are sufficient to emphasise the importance of this disease from an economic standpoint, but when one bears in mind that these losses can occur in pedigree flocks, the financial loss to the sheep farmer may be most serious.

Infection takes place, in most cases, in early life, when the lamb is only a few months old (due probably to less power of resistance) owing to ingestion of the proglottides or matured ova of the *Tænia cœnurus* voided by the dog.

Types of Cases:—Broadly speaking there are two distinct types, *viz*., cerebral and cerebellar. In each type there will be some signs common to both, *e.g.*, altered facial expressions, ear carriage, unsteadiness of gait, grinding of teeth, swaying movements, exaggerated action of one or more limbs, varying degrees of paralysis, and loss of flesh. In the cerebral type, as the cyst matures, the senses are dulled, sight, hearing, touch, or all three. The head is held differently, either to one side or slightly raised or depressed, one or both ears may be lopped; the sheep will be generally less inclined to move about, excepting the animal which has the cyst located in the extreme anterior portion of the cerebrum, involving the olfactory lobes, when it constantly walks more or less in a straight line until meeting some obstruction, and there it will remain for a long time (*see* Fig. 2). Many appear quite stupid, and do not attempt to run away when approached by man or dog; a large percentage show complete blindness in one eye, some show paralysis of the lips, accompanied by excessive salivation, which may be green in colour (termed "greenmouth" by some shepherds). On closer examination many of these cerebral cases will show softening of the cranial bones, but one must be careful not to presume this to be always associated with the presence of a cyst: it is sometimes due to injury, in which case there is a depressed fracture of the skull. Then there are the characteristic turnning or circling movements to left or right when grazing, and when the head is held at the normal height when moving to fresh grass; and as the cyst grows, and more brain tissue is injured, the sheep is unable to stand, and finally there is general paralysis or death from exhaustion. The cerebellar cases, on the other hand, are characterised by quite a different set of symptoms: absence of softening of the cranium, no blindness, no expression of stupidity; but there is marked hyper-æsthesia, and on seeing either a man or a dog approach, such an affected sheep darts off at once, holding the head somewhat higher than normal, and directed to the opposite way in which the rest of the body is travelling. There is a frightened expression, a stilt-like gait of the hind legs, as in Fig. 3. As these cases become more advanced, the staggering gait becomes more marked, and in attempting to get away the sheep does so with jerky movements: it falters, falls over, struggles violently, regains its feet, repeats the performance, ultimately collapses entirely.

Treatment:—The only treatment is surgical, *viz.*, boring or trephining the skull, removing the cœnurus or cyst and fluid contents (refer to inflammatory or meningeal fluid); but before this can be carried out the location o the cyst must be decided upon. At least 75 per cent. of the cerebral type can be successfully operated upon, and if one selects the more favourable cases, *viz.*, those which show very decided circling movements with accompanying blindness in the eye opposite to the side which the sheep circles, also cases showing marked stupidity and dullness, with softening of the skull over the olfactory lobes or just behind the horn core, then 85 per cent. to 95 per cent. of cures can be expected. Though I have successfully removed the vescile from the posterior brain, I do not advocate attempting operative treatment in the cerebellar type, owing to it being nearly impossible to avoid fatal hæmorrhage.

Selecting cases for Operation:—Whenever possible arrange to have the affected sheep penned up and fasted over night, then when turned on to grass the sheep will at once commence to graze, provided the case is not too advanced, and in the space of a few minutes one will notice the characteristic symptoms already mentioned. The commenest variety are those which when grazing do so in either small or large circles, and when seeking fresh herbage, with head held in normal position, walking round to same side forming half, one, or more complete circles. Others of this type will hold their heads directed round to the shoulder of the same side; practically all these cases will show blindness in the opposite eye, and the best way to test this is to quietly walk up to the sheep as it is grazing, or standing still on the opposite side to which it turns, holding a white handkerchief or other object close to the eye, when it will at once be observed the sheep takes no notice, while on passing the hand over to the other eye the sheep will instantly jump away from one's hand. The skull is then examined for sensitiveness to pressure, and for a softened area, which there will be in the great majority of this type if not more than fifteen months old. In a good many of these the skull will have been very much thinned by the pressure of the cyst, or by the action of the fluid when the vescile has burst. An important feature to notice in this type of case is that when such a sheep is driven into a corner, and when attempting to escape, it will invariably swing sharply round to the opposite side to which it circles, and a certain number will show keratitis, the result of injuries to the blind eye. These symptoms of circling, blindness, etc., denote the position of the cyst, which will be found occupying the area of the lateral ventricle on the side to which the sheep circles, or in other words, the opposite side to the eye which is blind. I might here remark that in the cerebellar type the affected sheep invariably walk away from the side where the cyst is located, and also falls on to the opposite side. Fig. 2 illustrates the type which keeps on walking already referred to. In this case it has blundered into another sheep, and as the latter did not move away, the sheep in question remained in that position for a considerable time.

Operative Technique:—Having made up one's mind as to the position of the cœnurus cyst, the sheep is placed upon a table, all legs tied together in the fully flexed position by means of a piece of stout cord, held by an assistant, a second holding the sheep's head; the wool is clipped off the skull, and the immediate seat of operation closely clipped with scissors; the skin, if very dirty, is washed with æther soap and warm water, otherwise treated solely with tincture of iodine. One c.c. of codrenine or other suitable local anæsthetic is then injected into the skin immediately over the spot where one imagines the cyst to be: generally speaking, half an inch to one inch behind the horn core. Strict asepsis must be observed, a small saucepan or steriliser should be close by, and any instrument used should be put back into a boiling water before re-using. A short incision is made through the skin, artery forceps applied to any severed vessels for a moment, to prevent blood entering the cranial cavity, and the skull is penetrated by means of a trochar or trephining borer, or by a small trephine. Personally, I rely upon the former when there is softening of the skull, and the borer when this condition is absent. When the borer is used it is advisable to remove the powdered bone before entering the cranial cavity. The *dura mater* must be punctured, and if the cyst is on the surface of the brain some portion of it will instantly protrude, especially if the sheep struggles or jerks its head; and in a good many cases a considerable portion of the vesicle will push its way out, but it sooner or later bursts. If the cyst is not yet visible, carefully introduce a small cannula for about a quarter of an inch, by means of a small syringe endeavour to extract the cyst by suction. Brass syringes are advertised for this purpose, but it is much safer to use a glass syringe, as one can then readily notice if any fluid is being withdrawn, and if this is quite clear, or tinged with blood; if the latter, discontinue use of syringe and introduce a grooved director, then carefully probe for the cyst, and if this has already collapsed, ascertain extent of cavity, re-insert the cannula, this time a little deeper, again carefully use the syringe, and with patience one will invariably bring some portion of the cyst wall into the bore hole. One should then secure some portion of the membrane, and by exerting traction at first at one place and then at another, the cyst will be detached and extracted. Now attempt to remove the fluid by again using the syringe, but with great care, otherwise hæmorrhage will take place; empty the fluid as the syringe is each time withdrawn into a measure glass, as the amount withdrawn should coincide more or less with the size of the cyst removed. Small cysts will yield half to one ounce, whereas large ones yield two and a-half ounces. An ordinary milk syphon in many cases will be found useful, as one can, while the syphon is in position, manipulate the sheep's head by turning the nose to either side, or downwards or upwards as the case may be, and so draw off the fluid. Nearly all writers on this subject advise not removing all the fluid at the time of operation, but in my opinion all the fluid should be removed. All that now remains to be done is to apply a little iodine to the wound, cover up the bore hole by pushing back the periosteum, introduce a single suture into the skin wound, apply more iodine, dry the surrounding parts if bloodstained, especially in hot weather to avoid the attentions of the fly, release the sheep's legs, and allow it to go free in the field or paddock, but avoid turning out where the sheep might get into a ditch or pond. In advanced cases where the cyst has passed upon the olfactory region there is a great tendency for the sheep to walk down to the edge of a pond or wet ditch, and many have been drowned in a few inches of water through merely pushing their noses under the water. Never operate at or close to the middle line of the skull, otherwise fatal hæmorrhage will ensue if the longitudinal fissure is penetrated.

Recovery :—When once the cyst and fluid have been removed, the return to normal is most marked in a short time : even within half an hour sheep which have not stood for several days are again able to do so, and in about two hours will be walking. Sheep recover their sight sometimes within twelve hours. I should have said something about differential diagnosis. Gid may be mistaken for injuries to the brain, chiefly depressed fracture, especially in quite young tegs. Again, the greenmouth sheep already referred to is frequently the victim of *Oestrus ovis* larvæ, which also cause extreme dullness. There is, however, generally some nasal discharge.

" Veterinary Journal ", Vol. 88, No. 5.

R. V. PATEL, G.B.V.C., PENANG, F.M.S.

By the retirement from Government Service and the departure for India of Mr. Patel, our Association has lost one of its most outstanding and enthusiastic members.

Plain and simple in habits, independent in spirit, amiable and cheerful in temperament, Mr. Patel within a short time of his joining our Association proved himself to be one of its very popular members and stalwart supporters. He was a very frank and outspoken man, so much so, that none of those whom he used to banter with his harmless criticisms ever took any offences at all. An active participant in billiards and cards, he did not confine his attention to our indoor games but displayed a vigorous interest in the varied out-door activities of our club.

Born in 1885 and brought up of a very good family at Nadiad in the Bombay Presidency, young Patel had his early education in the Local High School there. He then turned to the study of Veterinary Medicine at the Government Veterinary College, Bombay, from where he graduated in 1907. Immediately after being qualified, he was selected by our Government as a Veterinary Inspector, and sent to Province Wellesley. During his long period of 14 years in the Province he showed conspicuous ability in his professional work and as a result of his meritorious services he was offered a Prize Appointment and appointed as an Assistant Veterinary Surgeon at Penang.

None who came in contact with his work could deny the splendid services he rendered to his department and to the public. From his early and pioneering days to the end of his career here his work drew encomiums all round.

He was an asset to our Committee, where we miss him very badly. It is the prayer of all his friends that he will be spared for long in full health and vigour to enjoy many happy years in retired contentment in our motherland. ***M. V. P.***

"The Indian Association Bulletin" Penang, November, 1932.

Reviews.

Veterinary Pathology and Bacteriology.—By S. H. GAIGER, F.R.C.V.S. and G. O. DAVIES, M.V.Sc., M.R.C.V.S., D.V.H. 1932. Bailliere, Tindal and Cox., 7 and 8, Henrietta Street, London, W. C. 2. Pp. viii+610, with 194 illustrations, 25 s.

The book will supply, we are glad to say, a long felt want by the English speaking student of Veterinary Pathology and Bacteriology. The students will welcome the book because within its pages is enough information and it will save them the time and labour of obtaining notes on those subjects. To a practitioner who wishes to know some essential Pathological or Bacteriological features of a condition met with in practice, the book provides the necessary information.

The book is divided into three Sections and an appendix is given at the end. Section 1 contains five chapters dealing with General Pathology. This part is written in a very comprehensive manner and it should be of very great use to the student.

Section II contains twenty three chapters and forms the major portion of the book. In this the authors deal with the diseases caused by bacteria, fungi, protozoa, viruses and those of uncertain origin. The information contained in these chapters are in a nutshell. The authors have adopted the nomenclature of the Society of American Bacteriologists along with the older names as synonyms. This nomenclature, unfortunately, is bound to cause a certain amount of confusion to the student, but it seems to be a small matter in comparison with the advantages gained in obtaining the latest information in the diseases caused by bacteria, etc.

Section III contains nine chapters dealing with Special Pathology devoted to diseases of the various systems, such as the circulatory, nervous, respiratory, etc. There is plenty of informarion available in this section and the authors have included a small list of parasites found in the stomach and intestines of the domesticated animals.

The appendix is devoted to the laboratory tecbnique wherein methods in vogue in laboratories have been summarised. This is usefu linformation both to a student who works in a clinical laboratory during his course in a College and also to a practitioner who has a small laboratory of his own.

One specific feature of the book is the information on diseases affecting poultry.

We have much pleasure in recommending this book with confidence to Veterinarians in general and Students in particular, The book contains 194 very good illustrations and the get up of the book reflects credit on the publishers.

The Modern Review—January Issue.—*The Modern Review* usually contains 120 pages. The current issue contains 136 pages. It has, in addition, two multi-coloured reproductions of water-colours by well-known artists, and black and white reproductions of 9 frescoes from a royal pavilion of Isfahan in Persia, separately printed on art paper. There are, besides, 51 other illustrations.

Rabindranath Tagore has contributed one poem and one article to this number. There is one short story by Srimati Seeta Devi, and some chapters of Nagendranath Gupta's romance, "A Planet and a Star." Two letters of Mahatma Gandhi to C. F. Andrews are printed in this number.

In addition to these, there are 16 articles, many of them of a topical character. Among them mention may be made of Rev. J. T. Sunderland's article on the American Poet Whittier; Mohammad Ishq's article on "Pur-i-Dawcod: a Scholar and Poet of Modern Persia"; J. M. Kumarappa's article on "America and the Ottawa Pact"; James H. Cousin's "Shelley's Aesthetical Philosophy": Naresh Chandra Roy's "Control of the Executive over the Judiciary"; O. C. Gangoly's "Art: an Untouchable in Indian Education"; "Retrenchment,' by Hemendra Prosad Ghose; "Manchuria and the League of Nations" by S. C. Guha D. Sc., of Berlin; "Ram Mohun Roy Centenary Memorial" by Taraknath Das: "Ottawa Trade Agreement" by Nalini Ranjan Sarker, President of the Bengal National Chamber of Commerce; "Itinerary of the Persian Tour" by K. N. Chatterji; "The Brahmanic Sculpture of the Gupta Period" by Ramaprasad Chandha, late Superintendent of the Archaeological Department.

This issue contains reviews and notices of more than 40 books, 9 selections from Indian Periodicals, 5 selections from Foreign Periodicals, 7 interesting and illustrated gleanings from scientific magazines, 5 Notes on Indians Abroad by Pandit Benarsi Das Chaturvedi, and 4 brief notes with pictures in the Indian Womanhood section.

The number of Notes on current topics by the Editor exceeds fifty.

Annual Report of C.V.D., United Provinces, for 1931-32.—Rinderpest was very severe during the year and the total number of deaths reported from this was 47,761 against 25,919 in the previous year and yet "Demands for immunisation of Cattle by S. S. method were received from many quarters, but owing to restricted funds the work could not be taken up." Success (91·2 per cent.) with "Danistol" in cases of Liver fluke in Cattle is recorded, but the report says the cost of Rs. 14 per animal is prohibitive and that experiments are in progress with a cheaper drug "Carbon Tetrachloride".

"Naganol" has been used with success in Equine Surra. 'Kaolin" though found not useful in the height of severity of Rinderpest, was yet useful in checking diarrhoea when the acute symptoms have passed. The opening of a "Virus" Depot for S. S. inoculation is under contemplation. We miss the Government review on this report in the booklet published.

Annual Report of C.V.D., Assam, for 1931-32.—We note with regret that Mr. W. Harris, Superintendent, C.V.D., Assam, has been compelled by ill-health to take leave preparatory to retirement. The Government have rightly placed on record their appreciation of the invaluble services rendered to the Province by the Retiring Superintendent.

Two items of professional interest need recording. (1) Cases of Anthrax have been successfully treated with intravenous injections of Arsenic. (2) An outbreak of Bovine Contagious Lymphangitis on Khanapara Farm was finally stamped out after the Live-stock were rid of "Lice" which badly infested them, thus indicating the "possibility of lice being one of the vectors for the propagation".

Annual Report of C.V.D., Central Provinces and Berar for 1931-32.—The results of 'Vaccination' against Rinderpest are said to be "very promising". The details are not given as they form the subject of a separate communication to the Government. The wide-spread prevalence of Piroplasmosis in Cattle in very striking, as many as 62,992 animals having been treated during the year. It would be beneficial to conduct some research into possible method or methods of transmission; and to fix the incriminating vectors, etc, We don't know if we are any more justified to deal with cases of Surra in horses under the Glanders and Farcy Act, when Naganol has been found to be so very efficacious. Perhaps the Act in C, P., needs to be siightly amended by the Local Government as has been done in Madras. In cases of Bovine Coccidiosis "treatment with Methylene Blue was found to be efficacious". A marked increase under every item of work is the pleasing features of the report and the Government's appreciation is as generous as the report deserves.

Annual Report of C.V.D., Bihar and Orissa, for 1931-32.—The year evidently was a healthy one for Cattle. The new College at Patna is taking rapid strides. Nothing succeeds like success. Provision has been made for running a Post-Graduate Class with up-to-date hostel accommodation for the Officers. Twenty-nine cases of Bursatti were successfully treated with intravenous injections of Iodine. Good results have been obtained with Trypan-blue in cases of debility.

Obituary.

We regret to record the sad demise of D. Kamayya, G.M.V.C., of the Civil Veterinary Department, Madras, on the 18th October 1932 after a service of nearly 14 years. He was only 36 years of age and that makes the grief all the more poignant, and of P. Chidambara Nadar G.MV.C., who died on 6th November 1932, at the age of 47, after a service of nearly 23 years. We offer our heart-felt condolence to the members of the berieved families.

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16. APR. 1943

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WILLIAM HARRIS ESQ., V.D., M.R.C.V.S., I.V.S., Superintendent, C. V. D., ASSAM, who has gone on leave preparatory to retirement.

RAI SAHIB P. N. DAS, Assistant Director, C. V. D., BIHAR & ORISSA, who retired on 14th May 1932.

THE

Indian Veterinary Journal

Vol. IX] APRIL, 1933. [No. 4

Editorials.

CIVIL VETERINARY SERVICES IN INDIA.

II

BOMBAY PRESIDENCY.

We propose to review in some detail the fortunes of the Civil Veterinary Department since its inception in the Bombay Presidency; but our efforts in this direction are handicapped by the paucity of authentic information regarding its early history. It is doubtful whether any organised agency for dealing with the veterinary needs of the Province existed prior to the year 1886, when the Bombay Veterinay College was established. This pioneer institution owes its origin largely to the breadth of vision, zeal and enthusiasm of its first Principal Prof. J. H. Steel, F. R. C. V. S. Like most other new ventures, this College too had a modest beginning and started with a staff consisting of a Principal, an Assistant Principal, two Lecturers and a Farrier Major. At the end of the year 1887, there were 64 students on the College rolls. For imparting clinical instruction to the students, the Sakarbai Dinshaw Petit Hospital for Animals was made available, through the generosity of the late Sir Dinshaw M. Petit (1st Baronet). The Bombay Society for the Prevention of Cruelty to Animals undertook the management of the Hospital, *viz.*, supply of food, medicine and attendants for the patients, and the technical staff of the College rendered veterinary aid in return for the clinical facilities afforded to the students. The College itself was located in the old bungalow and the other buildings in the Hospital premises, which were placed at the disposal of the Government by Sir Dinshaw Petit.

The first batch of 25 Graduates of the College came out in April 1889, Improvements and additions to the staff and equipment of the College were made from time to time, but the College was rather unfortunate to lose its first Principal early in its career. Prof. Steel died in January 1891 and was succeeded by Col. J. R. Rayment, A. V. D., for a short time. Then followed Col. James Brodie Mills. He remained as Principal for about 15 years. During this period Government sanctioned the acquisition of the land adjoining the existing buildings for the construction of a new building for the College and a hostel for students. In 1909, the new College building and hostel were completed and occupied. After the retirement of Col. Mills, Col. Joslen was made Principal but his untimely death in February 1910, frustrated the plans he had formed for the further improvement of the College.

Mr. K. Hewlett, then became Principal and continued as such for about 22 years until his retirement from service in April 1932. During this period further additions in the shape of stalls for animals, Dissection rooms, Lazaretto and Incinerator, were built in close proximity to the College. Mr. V. R. Phadke, a graduate of the College was appointed to succeed Mr. Hewlett as Principal. This event is of no small importance in the history of the College, for it marked the appointment of the first Indian as head of the institution. It must be a source of gratification to the Government as well as to all those who have helped in establishing and developing this institution that so many of the graduates from this College have distinguished themselves in positions of responsibility and trust in India, Burmah, Ceylon, F. M. S., Africa and other parts of the world.

This College has been in existence now for about 47 years and during this period about 700 Graduates have emerged from its portals to supply the veterinary needs in India and elsewhere as stated above. It may not be widely known that, very recently, this Institution, with such a record of solid work behind it was sought to be brought under the Retrenchment Axe and extinguished.

We are reliably informed that the threatened catastrophe has been averted. We take this opportunity of rendering our respectful thanks to the Government of Bombay for their decision to allow the College to continue in its career of usefulness.

The Bombay Civil Veterinary Department was organised in 1889, the year in which the first batch of students graduated from the Bombay Veterinary College. That the growth and expansion of the Department during these 44 years have been too inadequate to meet the needs of the Province, is evident from the number of hospitals and dispensaries available for the treatment of animals in rural areas and the existing provision for combating outbreaks of contagious diseases of animals.

There are now 105 dispensaries in Bombay and 18 in Sind. The total number of Veterinary Assistant Surgeons is 123 in Bombay and 21 in Sind. The controlling staff consists of a Director, a Deputy Director and four Inspectors.

Taking into consideration Bombay Presidency alone, the average yearly recruitment to the Civil Veterinary Department works up to less than 3 veterinary graduates. It is scarcely necessary to point out that such a state of affairs is deplorable. The root cause for such stagnation and want of progress in a Department of Government which is admittedly indispensable for the agricultural and econmic well-being of rural India must be sought for in the policy and programme adopted. So long as the policy in regard to making adequate provision for the growing needs of veterinary work in the Provinces remains as at present, viz., to tap the resources of the Local Boards, no better progress than that achieved by the Bombay Civil Veterinary Department during the 44 years of its existence can be expected. It has been proved to be so in the case of at least one other Province. We appeal to the leaders of public opinion in the Presidency to accelerate the pace of progress of the Veterinary Department, which is so intimately connected with the well-being of the Live-stock of the country.

Sind seems to be unfortunate in regard to its Veterinary Sevices. The proposals made from time to time for the organisation of an adequate Veterinary Service, do not appear to have materialised. Now that there is a prospect of its acquiring the status of an independent Province, let us hope for the fulfilment of the need for a progressive Veterinary Department under the new dispensation.

BOMBAY'S HOUR OF TRIAL.

[This article was published in a leaflet form, immediately after the appearance of "The Thomas Report" and sent to Members of the Bombay Government, Members of the Bombay Legislative Council and other public men, in good time, as an advance copy. We are glad that since then the Government of Bombay have taken the only wise step they ought to and the thanks of the profession are due to them.]

Bombay, normally a gay and prosperous City—the Paris of the East—is now in the throes of an economic death. Even more pitiable than her death-struggle, is the way she is being treated for her complaint by Expert Physicians! The sum and substance of their prescription is that a head-ache cannot occur and continue to trouble the body, if the head is lopped off!

The process of dismemberment is to start immediately lest complications should arise! Poor Bombay! She thought there will be safety in the multitude of counsel and called in a Committee. But the safety seems to be for the physicians and not for the patient.

We wonder if ever in recent years a more patently monstrous record was produced by any responsible Committee than what is known as the 'Thomas Report' of Bombay. We will not be surprised if it gains currency as a proverb for all that is absurd, retrograde and unstatesmanlike. Its merit lies in the fact that it can very easily beguile the unwary by the show of great concern for the Tax-payer's money, so ingeniously introduced at every stage of that report. People may not be wanting who will go *in excelsis* over that report on account of the gigantic savings shown on paper, not realising the deep game underlying the scheme and the snare set up in it. It is a masterly attempt at putting back the hand of progress by nearly a century. Under the pretext of saving the Tax-payer's money, all the nation-building departments are either to be abolished or curtailed!

We admit an international City of commercial importance and its presidency have been very hard hit by the universal economic depression accentuated by an unfortunate political situation. The huge deficit in its revenue must necessarily be very disquieting to any Government. But is the cure to be worse than the malady? Fancy a Committee proposing the abolition of all Vocational Colleges—the Agricultural College at Poona, the Veterinary College at Bombay, the Sydenham College of Commerce, the School of Arts, even the Medical and Engineering Colleges if possible are to be abolished. Hospitals are to be closed: The activities of the Educational Department are to be curtailed. Call this economy? Reorganisation? It is an insult to human intelligence. Then what is there for the Government to administer when all this process of annihilation is over? If there was no "adequate return for the money the Tax-payer spends" on the above Colleges, it was due to lack of progressive policy on the part of the Government. Neither the Science nor the College can be found fault with for want of honest attempt on the part of others to utilise those Colleges in the best interests of the country.

We shall confine ourselves to the Veterinary College at Bombay. If that is closed does the Committee think the demand for Veterinary Services will increase? Is it not vital that agricultural India should save her millions of cattle through a well organsied Veterinary profession? Does not the Committee know the enormous loss the presidency is put to year after year through preventable diseases *for want of adequate Veterinary Aid?* Did not even the last Royal Commission on Agriculture recommend the expansion of the Veterinary Department in all the presidencies? Is it not a fact that the presidency is demanding for more Veterinary aid ? With pardonable pride we beg leave to assert that if there is one Department of the Government which is gaining popularity in rural India by rapid strides, it is the Veterinary Department. The Committee propose sending students to other presidencies for training ! Such a life of parasitism would have suited the conditions of Bombay a century ago. And are other presidencies going to put themselves to extra expenditure to provide for Bombay students ? It all means complete denial of Veterinary aid to Rural Bombay ! Well may the Tax-payer of Bombay exclaim " Oh Lord ! Save me from my friends ".

At a time when the College is thinking of celebrating its Golden Jubilee, the Committee have prepared a coffin for it and are asking the Government to bury it with bell, book and candle ! Will the Government of Bombay accede to such an atrocious proposal ? Committees can afford to be irresponsible, but a Government cannot. Let them pause for a moment and take survey of the past glory and utility of one of the oldest of such Colleges in India. Let them bear in mind the vital need of the Veterinary profession to agricultural India. Let it not be said of them that at the instance of an alarmist Committee, the usual mental equilibrium of the Government has deserted them. Is Bombay so bankrupt of financial heads as to fail to devise better methods of combating the demon of a deficit ? If the recommendations of the Thomas Committee are approved and given effect to, the Government of Bombay will be staging an administrative massacre unparalleled in the history of Britssh Governmet in this unfortunate country. All eyes are on Bombay now. May God grant her wisdom enough to acquit herself creditably at this hour of her trial !

THE PROBLEM OF THE HOUR

The one question that looms large in the eyes of those who bestow some thought over the future of the Veterinary profession in India and the country's welfare is the rapid rate of unemployment that is spreading even in an infant profession like ours. Far behind other countries, India had just started equipping herself in the Veterinary field when she finds herself cribbed and cabined and pulled back ruthlessly by the so-called financial *pundits*. We witness to-day the unedifying spectacle of a profession being throttled to death before it has scarcely been born and a Government usually sane and sagacious inclined to yield to questionable cries of false economy.

To be wise after an event is a proverbial weakness of the average humanity ; but a responsible Government must avoid falling a prey to such weakness. Where an individual fails, a Government must be able to succeed. The Din and Dust of the disturbed times, the unreasonable cry of vested interests, .the bogus philosophy of self-appointed advisers, the alarming cry of a few scare-mongers, the threat of a handful of professional agitators and the like should in no way dissuade the Government from its path of duty. To be far-sighted, to be clear visioned, to be calm and collected when others are in a quandry and to be courageous are attributes which are generally associated with all good Governments. Country's interests ought to be the prime concern of any Government.

Now, is it in the interests of the country to stop recruitment to the different Veterinary Services in India? Is it giving effect to the proposals of the last Royal Commission on Agriculture? Is it fair to continue the ridiculous ratio of " one man for every 700 square miles to treat nearly 1½ lakhs of cattle"? Is it wise to curb the advancement, of the profession at the very first stage of its growing popularity? Is it economy in the first place to stint a few lakhs and make the country lose in millions later on? Well, we have cried ourselves hoarse on all these points times without number in these pages and we only expect the Government, and the Departmental heads of the several presidencies *to keep on moving* where the Veterinary profession is concerned *in however small a degree*, as it is closely involved with the prosperity of the poor Indian ryot. Let not the profession be hurled down the depths of Oblivion in the name of Retrenchment. It may not be possible to raise it back again in the near future. Repentance may be too late.

We want more men to control the contagious diseases; we want more hospitals and dispensaries for the relief of the dumb suffering animals; we want more Research workers and well-equipped Institutes to tackle the many problems awaiting solution Every taluk Board and Municipality can be made to utilise the services of qualified Veterinary Surgeons for Meat and Milk Inspection in the interest of Public Health. These are steps in the right direction, which we hope will receive due consideration at the hands of Government. We see on the one hand the country crying for more Veterinary aid and on the other, hundreds of young men being told there is no need for their services. Let there be imagination, let there be vision, let there be fore-thought, and .let there be sincerity in all tall talks of serving the interest of the ryot. It is only then the Government and the heads of department would have played their part honourably and well."

Lest we should be thought to be too theoretical and not practical, we give below more definite proposals for the esteemed consideration of all concerned.

Let us take Madras. Meat forms part of the diet of most of the people and Milk is consumed by almost all. In the interest of Public Health, it is highly necessary, nay vital, to have complete control over the wholesome production of these two articles of diet. If not in all the places, at least in Cities like Madura, Trichy, Tanjore Ooty, Coimbatore, Vizag, etc., Municipal bye-laws must be so framed as to make it compulsory to slaughter all animals intended for consumption in a single central Abattoir under Expert Supervision. Similarly to insist upon Sanitary Cow-sheds, drawing of milk under sanitary conditions, arranging for Milk Depots and pasteurisation of milk and testing the cows periodically for Tuberculosis, etc., must be made. Next, measures to control Bovine and Equine Contagious diseases within Municipal areas can be taken up. These, we believe, are enough work for one Officer and a Veterinary Surgeon is most eminently fit by his training and equipment for tasks mentioned above. In addition, his services can be utilised as Superintendent of local S. P.C. A., as Hackney Carriage Inspector, and in all matters of Veterinary Hygiene and Sanitation. In fine he will be the Veterinary Health Officer of the Municipality.

What is true of Madras. is true of other Presidencies as well. A comprehensive scheme on the lines suggested above seems to us to be highly imperative and we appeal to the enlightened public, members of the Legislative Council, Heads of Departments and Local Governments to take up this question in right earnest and face it boldly and squarely. Public-Health, prevention of infant mortality, control of Tuberculosis and national vitality and prosperity are all involved with this question. Let there be *action and not inaction, progress and not a set-back.*

MADRAS VETERINARY COLLEGE RESEARCH.

A very important and outstanding piece of research work of considerable economic value relating to a widely prevalent disease of cattle known as Nasal Granuloma or " Korattai " in Tamil, has just been completed by the Lecturer in Parasitology at the Madras Veterinary College.

The etiological factor of this disease remained undetermined all these years notwithstanding the attempts made by some workers. During last year three workers in different parts of India, viz. Mr. P. G. Malkani, at the Patna Veterinary College, Captain S.C.A. Datta, at the Imperial Institute of Veterinary Research, Muktesar, and Mr. M. Anant Narayan Rao, at the Madras Veterinary College independently found the cause of the disease to be a Schistosome, but the chain of evidence was not complete without being able to produce the disease artificially by transmission experiments. This link in the chain has now been furnished by the experiments successfully carried out (thanks to the Government for sanctioning this piece of research) by Mr. M. Anant Narayan Rao at the Madras Veterinary College.

The economic value of this discovery may be gauged by the fact that though the disease is not rapidly fatal the affected cattle become incapacitated for work and consequently the sale price goes down very considerably.

The disease manifests itself by nodular growths in the nostrils which in course of time obstructs breathing and gives rise to a peculiar snoring noise. The name " Korattai " signifies this.

Now that the cause of the disease and the mode of infection have been definitely ascertained, it is comparatively easy to adopt prophylactic and curative measures.

Prevention consists in clearing the ponds, *etc.*, of snails which act as the intermediary hosts in the transmission of the disease, so that the larval worms may not be taken in by cattle having access to these ponds.

Tartar Emetic has been found to be an agent of curative value. Further work on this problem is under contemplation.

This piece of work is but another illustration of the paramount importance of research work on parasitic diseases of animals in this country. Mr. T. J. Hurley, the Principal of the Veterinary College and Mr. M. Anant Narayan Rao, Lecturer in Parasitology, deserve to be congratulated on this splendid piece of work.

WILLIAM HARRIS Esq. V. D., M. R. C. V. S., I. V. S.

Assam sits forlorn at the departure of Mr. Harris, the father of Veterinary profession in that Province, on long leave preparatory to retirement. Born in 1879 at Edinburgh, after his early scholastic career, he joined the Royal (Dick) Veterinary College in 1897 and graduated from it in 1901, carrying away the Medals in Botany, Anatomy, Physiology, Materia Medica, Pathology and Obstetrics. He was also the first candidate to win the Wallay Memorial Prize.

He took up service in the Veterinary Department of the City of Birmingham and working under that well known Veterinarian, Mr. John Malcalm, he gained considerable experience in Meat and Milk Inspection and the carrying out of the various contagious diseases (Animals) Acts, which stood him in good stead later in life. While there, he attended the University Classes in Bacteriology and Pathology and later took up a post-graduate course on Tropical Diseases at the R. V. C. London under Sir John McFadyean, In 1906, he joined the I. V. S., and after a year's training at the Bengal Veterinary College under Col. Raymond, he was appointed as the Superintendent of the C. V. D., in East Bengal and Assam with head-quarters at Dacca. In 1912, on the redistribution of Provinces, he was transferred to the C. V. D., Assam with head-quarters at Gauhati. Previous to 1907, there was no Veterinary Department in Assam and it fell to the lot of Mr. Harris to create one. Men and money had to be found and the creative genius of Mr. Harris has left behind to-day a well equipped Veterinary Department and the monumental structures, roads, garden, the beautiful avenue of trees and an excellent museum in the Veterinary Colony over there. Placed in a more advanced province, Mr. Harris would have played a greater part; but he did his duty truly and well under depressing conditions even in a tract like Assam.

Isolated from contact with other professional colleagues and Colleges, it was the persevering nature of Mr. Harris that was responsible to keep himself and his subordinates up-to-date in professional knowledge through medical and Veterinary periodicals. He was a strict disciplinarian, who was not afraid of doing justice, either out of fear or favour. Affable by nature, he was kind to his subordinates and helped them in times of need. He was a Major in the Assam Auxiliary Force and was a recipient of the 'Veterinary Decoration' for meritorious service.

May he live long and enjoy his well earned rest, is our prayer.

RAI SAHIB P. N. DAS

Retired Assistant Director, C. V. D., Bihar & Orissa.

Born in 1875, in the district of Faridpur (Bengal) young Das was educated at the Central College, Calcutta. Later, he joined the Bengal Veterinary College and graduated from it in 1900, topping the list and securing five prizes out of six including one "for the best all round man in the College" offered by the then Lieutenant Governor of Bengal.

In the early years of his service he was entrusted with such important duties as eradication of Glanders from the neighbouring districts of Calcutta; Cattle Breeding operation in Bengal &c., and in 1912, with the formation of the new province, he was posted as an Inspector in Bihar & Orissa. In 1913, he was asked to train up two dozen students in the practical method of inoculation, and in 1919, he prepared a comprehensive note on the condition of Purnea Cattle after making an extensive tour in the district. In the same year he was elected as the Secretary to the Live-stock Section of the Bihar & Orissa Provincial Exhibition held at Patna, under the distinguished presidentship of Hon'ble. Sir Walter Maud. K. C. S. I., I. C. S., C. S. I. Soon after this, Mr. Das was promoted to the Gazetted rank.

In 1920, he was entrusted with the work of compiling a note on "Flaying of Goats alive" which was published by the Bihar & Orissa Government with photos and diagrams and the Government was so much pleased with this work, that they granted him a substantial honorarium. In 1922, Mr. Das took his Post-Graduate course of studies at the Muktesar Institute. He was singled out to be promoted to the Imperial Veterinary Service, but the Lee Commission Report which stopped further recruitment to that Service, stood in his way. On the New Year's day of the same year, the Government were pleased to confer on him the title of Rai Sahib in recognition of his good services to the Government.

It was due to Mr. Das's initiative that the Bihar and Orissa Veterinary Association came into existence and he continued to be its President till the day of his retirement. He held the Presidentship of the All-India Veterinary Association for 1924-1925.

After the lamentable demise of Capt. Howard under tragic circumstances, our Rai Sahib succeeded him in Orissa Range and continued to be there till the day of his retirement.

During the later years of service he published his findings on "Nasal Granuloma..' He was a popular figure in Co-operative fields and Gorakshini Sabhas. His Presidential address for the improvement of cattle was extracted in 'Young India' with a favourable editorial comment by Mr. M. K. Gandhi.

After nearly 32 years of service, Rai Sahib P. N, Das, retired on 14th May 1932, when he was given a send off worthy of his position and splendid services rendered to the State.

May he be spared long to enjoy his well earned rest!

SOMETHING TO REMEMBER.

At a meeting of the Animal Husbandry wing of the Board of Agriculture and Animal Industry, Dewan Bahadur Sir T. Vijayaraghavacharya, its Vice-chairman said that certain figures had been supplied to him, and from them he gathered that India possessed 300 millions of domesticated animals and the very next country, the United States, possessed 180 millions. That was a very impressive figure, but when he looked at the figures of expenditure on animal husbandry, he found that India took a very low place. Worked out to a per capita rate, India spent, both centrally and provincially, a sum of six pies per head on animal husbandry. The figure for the United States exceeded one rupee. He, therefore, thought that that represented the need for animal husbandry work, the need for propaganda work, the need for drawing attention to the great importance of live-stock and the necessity for adequate financing of it. India had certain very good breeds of cattle which, if properly developed, would become some of the finest breeds in the world. He did not doubt that there was a very wide field for improvement in stock. The great problems were, however, those of animal health and nutrition. Recent experiments had shown that, apart from the veterinary work, the actual treatment of sick animals, proper diet and proper nutrition, apart from insuring proper development, would help to insure Indian cattle against a large number of diseases that now attacked them. The importance, therefore, of a thorough investigation of animal nutrition could not be overemphasised.

THE 135TH MAN.

We were under the impression that we have outlived the days of gross favouritism and grave injustice in the history of Public Services in India. But we find we were in a fool's paradise. A case of nepotism of the first magnitude has been practised with impunity in the Civil Veterinary Department, Madras. The tale is only to be told to realise the enormity of the heartless injustice that has been perpetrated on 134 hard-working seniors in that department. The so-called "safe-guards" in the form of Public Services Commission, Eligibility list, Selection Grade, Communal Rotation, etc., etc., have all been cast to the winds. It is a glaring instance of how the good intentions of even a mighty Government can be set at naught by its own subordinates, if they are only so inclined. The Government itself feels helpless before such paragons of Public Virtue! Let us now get to facts.

For the post of the Disease Investigation Officer in the Presidency of Madras, a person who occupies the 135th place in the establishment list of the *Ordinary* subordinate cadre has been preferred to so many of his seniors, some of whom in the *Selection* grade with brilliant records of service to their credit.

On one fine morning, the Director of Veterinary Services, Madras rose to find in this 135th man, all qualifications necessary to fill in the post of the Disease Investigation Officer. The pity of it was that he tried hard to find another amongst nearly 300 of his subordinates, both gazetted and non-gazetted, but there was none to approach anywhere near the subject of his final choice! He immediately wrote and informed the Government of his great find and said that the only man he could think of as best suited for the post was this 135th gentleman!

The Government looked in amazement! They wondered if that could be a fact! They could not understand how amongst 134 seniors and about 20 District Veterinary Officers, there is not a single man to take up after all not any work of Research, but a field investigation of diseases, as much as this junior! They said to themselves what had come upon the Madras Civil Veterinary Department to become so bankrupt of talent! They rubbed their eyes and read the Director's recommendation once again. They searched in vain for the usual restraint in language generally associated with men in responsible position. But no! The Director's recommendation was an unqualified assertion. The wrath of the Government was up. Their sense of justice was outraged and immediately went forth the reply to the Director that the candidate was far too a junior to be seriously thought of, particularly when there are a few at least amongst the seniors who are duly qualified for the post.

But the Director stuck on to his original proposal. The matter was referred to the Public Services Commission and they said that recruitment of this 135th man was impossible under the Statutory rules and that they could not find their way to agree to the proposal of the Director. At this stage a strange innovation seems to have come upon the Government itself. Their sense of justice had watered down a good deal. Their wrath was now one of smiles. They swallowed down their own previous statements, shifted from their original position and decided to recruit this 135th gentleman on a *contract basis* to overcome all difficulties. From this time onwards the Government was out-heroding Herod. They began championing the cause of this 135th gentleman even more than the Director, who at a later stage, it is said, recommended the name of an Indian M.R.C.V.S., Officer already in gazetted rank.

The profession which was till then depending on the sense of justice of the Government and the Departmental head, thought that the time had arrived to move in the matter. The Madras Veterinary Assistant Surgeons' Service Association sent in a memorial to the Hon'ble Minister through the head of the Department, pointing out the injustice involved if a junior was recruited for the post and recording the feelings of the profession on the question and requesting the Government to consider the claims of Seniors in the department with equal and even better qualifications for the post. At the same time a few of the kindly Members of the Legislative Council warned the Government of the grave danger to the sense of security in Government Service, of justice and of fair-play, if such a hap-hazard selection is made through circumvention of Rules and Regulations. The Hon'ble Minister had to face a volley of questions on the floor of the Legislative Council and he said in reply that the question of appointing a suitable candidate to the post was still under the consideration of the Government and that he would bear in mind all the facts brought to his notice and do justice in the matter. But notions of justice seem to vary with positions in life. Men of commoner clay like ourselves are unable to understand the 'justice' meted out by the exalted Minister in appointing the self-same gentleman against whom there was so much of opposition! A fine opportunity of enhancing the reputation of his administration, of proving his mettle, of doing a bare piece of justice and of avoiding a slur on his tenure of office has been lost by the Hon'ble Minister.

We now crave the indulgence of our readers to examine in a few lines, if this 135th gentleman is really so highly qualified as to deserve the greatness that has been thrust on him. He is a gentleman who passed out of the Madras Veterinary College taking full five years to get through the course, when the prescribed period is only three years, while almost all of his condemned seniors got their diploma within the prescribed time perhaps—it may be said—by a fluke. It is likely that the learned Director considered this as an additional qualification in the man! Having taken up his hard-earned diploma, he just served only for a few months in the field, when he took up an appointment as Veterinary Inspector at Muktesar, where we fear he remained for about a year. On return to his native presidency he got himself attached to the Laboratory at the Madras Veterinary College and he was one amongst the six or seven assistants working over there. Naturally the work was divided amongst them. Doing nothing beyond the laboratory routine such as examination of a few slides, being in charge of stores, despatch of Rinderpest Virus, etc., our readers can well realise that his career at the laboratory was such that it does not merit much mention here.

He is just a junior with barely 11 years of service and without any field experience worth the name. In the ordinary course of events in the department he would not have had his chance to be in charge of a hospital even. He had not even reached the top of the lowest grade in the Department. He has no extra qualification either in the form of a diploma or degree over and above his condemned seniors. The only qualification if it could be so called without abusing the English language is his 'sojourn' to England for about four or five months. Such short 'sojourns' are designated in India as "Post-Graduate Studies in England" (what a misnomer!) and much store is set upon them. Any body who could beg, borrow or steal or command a few thousands of rupees, whether he has the necessary aptitude or not, whether he has the necessary merit, experience and brilliance or not, can as per a glorious Government Order recently solemnised by the Madras Government claim by right the post of a Lecturer at the Madras Veterinary College. We thought this absurdity was being restricted to the Madras Veterinary College and we only deplored the fate of future men who will be trained at the hands of such "Professors." But now we find such 'sojourns' are considered seriously for even executive posts in the Department. This 135th gentleman has thus in the eyes of the Director and through him the Government of Madras suddenly qualified himself for the post by his short 'sojourn' to England!

Let us see what a savant of the profession, Col. A. Olver, C.B., C.M.G., F.R.C.V,S., Expert Adviser in Animal Husbandry to the Government of India has said about this disease investigation work in his presidential address at the 7th All-India Veterinary Conference at Bangalore. "*There appears to have been a tendency to regard anything in the nature of investigation as a matter beyond the capacity or interest of any but those who are employed in large research instituiions, and I want to impress upon yon all that a great deal of most valuable information, regarding, the diseases from which the live-stock in every province suffer, can be obtained by anyone who will make careful clinical observations and thorough post-mortem examination whenever an opportunity occurs, thus collecting material for further investigation:*"

Thus it would be seen that a senior officer with vast field experience and a fair knowledge of laboratory technique would have been the best choice. There are heaps and heeps of such men in the department. Nowhere has it been stated that the so called Post-graduate studies in England are neccssary for the post of the Disease Investigation Officer.

Even if it be so, there are so many seniors in gazetted rank with full foreign qualifications such as M. R. C. V. S., D. V. M., M. Sc., etc., etc., who could have been recruited for the post and their place would have gone to a senior and there would not have been such an outburst of feelings in the department. Again this Disease investigation work is more a continuation of the post of the Special Rinderpest Officer. When a senior officer could be found fit to investigate into that worst scourge of cattle in the self-same presidency fot the last two years with very good results, why should it now be considered as absolutely necessary to recruit this 135th gentleman for this post? Echo answers why?

In any case to taboo a long list of seniors as unfit for this taskf some of whom with longer laboratory experience, brilliant records o admirable service and better fitted in every sense for this field work, is the height of unfairness that can be extended to any class of devoted and loyal servants of the Crown.

The profession looked up in vain to the Government to render them the barest of justice. They begged of them not to depend on the bare and bald statement of an individual officer. They requested them not to take shelter under the plea of following an Expert's advice. They appealed to them to get into the merits of the case and sit in judgment without favour or prejudice. Bur all that was in vain.

Well, it is no use of arguing with people who revel and persist in their folly even when pointed out; people who have eyes and yet do not want to see; people who cannot realise that such deeds will undermine the morale of the service and people who forget how miserable they themselves felt and ran from pillar to post when their claims for higher posts were at jeopardy, perhaps not without some reason.

We have absolutely nothing against the person of this 135th gentleman. He is just as much a friend of ours as so many of our professional colleagues in this presidency and elsewhere. But a wrong of such magnitude perpetrated against so many of our professional brothers in service, who have flooded our office with heart-rending letters cannot go unrepresented in our pages. Our purpose in writing on this subject in such detail is to invite the attention of the public at large to the fact that it must be made impossible in future at least for such individual idiosyncracies to run amuck in official service.

In this unfortunate episode, the rank and file of the profession in Madras have nothing to be ashamed of. Their methods have been absolutely over and above board. They took to the most approved methods of constitutional agitation, which are possible for men in Government service. But poor men! They were arrayed against great odds which we do not want to detail here for the present. But they have done their duty.

> " Though the mills of God grind slowly.
>
> Yet they grind exceedingly small".

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Original Articles.

DISCOVERY OF THE CAUSE OF NASAL GRANULOMA IN CATTLE.

PRELIMINARY REPORT

BY

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Nasal Granuloma is a serious chronic disease of cattle characterised by mucopurulent or sanguinolent discharge from the nostrils and the appearance there of cauliflower-like growths which by obstructing the nasal passages cause considerable respiratory distress to the affected animals and give rise to the production of the characteristic snoring noise from which the disease is colloquially called "Sunsuna". The disease has so far been recorded only in India and even there its incidence is strictly restricted to certain provinces e.g. Bombay, Madras, Assam, Bihar and Orissa, Mysore and Central Provinces.

HISTORY OF THE DISEASE.

The disease appears to have been recognised in India for a great many years. One correspondent from Manbhum writes to say that the existence of the disease has been known there for over a century. The earliest contribution to the literatue of the subject however appears to be that of Jeya Singh Raj (15) in 1910, who reported the occurrence of this disease in Madras Presidency.

Parthasarathi Naidu (26) in 1921, published the next earliest contribution on the disease. This author reported having used tartar emetic with such success that he was inclined to regard the drug as a specific for the disease.

Krishnamurti (17, 18) between the years 1922 and 1925 published a series of papers on this subject. In these he described in detail the histopathology of the masses of granulation tissue in the nasal cavities and drew attention to the constant presence in sections of acid and alcohol-fast Granule masses " many of which could be readily seen to be composed of radiating elements the so-called 'rays' or ' Clubs '—very closely simulating those found in Actinomycosis." This author presumed that these Granule masses represented " the colonies of the causal organism ". But noting some striking differences between Nasal Granuloma and the common Bovine Actinomycosis he concluded that the causal agent of Nasal Granuloma must be closely allied to those of actinomycosis. He was, it seems, unsuccessful in transmitting the disease from affected to healthy animals by all known artificial methods. He appears to have also tested the efficacy of tartar emetic and came to the conclusion that the drug had no curative value in this disease. In 1927, however (19), he appears to have found that some cases of Nasal Granuloma were definitely associated with Rhinosporidium and as a result of this he opined that it might yet " be possible to correlate all the lesions found in cattle including those at present believed to be due to streptothrix organism, with Rhinosporidium as their cause ".

Cooper (7, 8, 9) studied Nasal Granuloma at Muktesar at different times between 1923 and 1931. He confirmed Krishnamurti's histological finding and further reported that he had succeeded in repeatedly isolating, from the lesions, a pure culture of an organism belonging to the Streptothrix group of bacteria. He also carried out several transmission experiments both with morbid material from affected animals and with pure cultures of the isolated streptothrix organism but obtained uniformly negative results. He noted that in staining affinities the Granule masses differed " from the streptothrix actinomyces in being quite Gram-negative " and that " none of the other recognished methods of staining actinomyces " brought out " further points of resemblance " and accordingly concluded that a " Ray Fungus " related to the classical actinomyces was the cause of Nasal Granuloma.

Das (10) in 1929 published the results of his experiments on the transmission and treatment of the disease, carried out in Bihar and Orissa. He confirmed that the disease could not be transmitted from animal to animal either through the agencies of soil, fodder, water or nose strings or by "subcutaneous, submucous or intravenous injection of diseased material." He proved the utter inefficacy of Potassium iodide as a therapeutic measure against the disease and gave convincing proof of the curative value of tartar emetic which had been suggested by Parthasarathi Naidu as a specific against this disease.

Edwards (12) in his comments on the results of Das' experiments drew attention of the rather significant failure of potassium iodide which usually has a " pronounced effect upon the clinically similar condition Actinomycosis " and opined that this might be an indication "that the condition" " was" "not in reality a streptothricosis, in spite of the fact that granules apparently indistinguishable from those of actinomycosis " were discoverable in the lesions. He further suggested a system of treatment for the disease analogous to

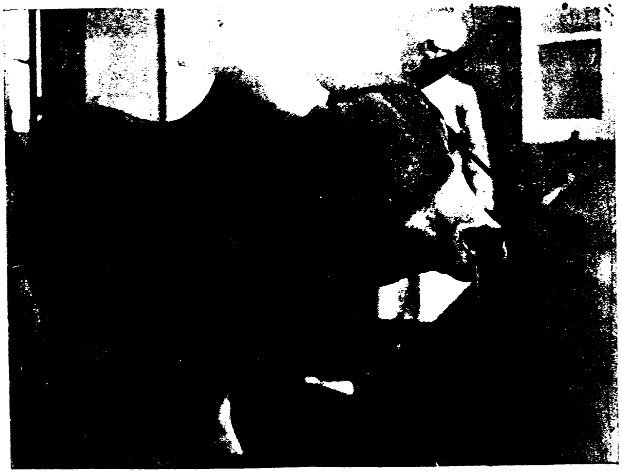

Fig. 1. Bullock suffering from Nasal Granuloma. Note the nasal discharge.

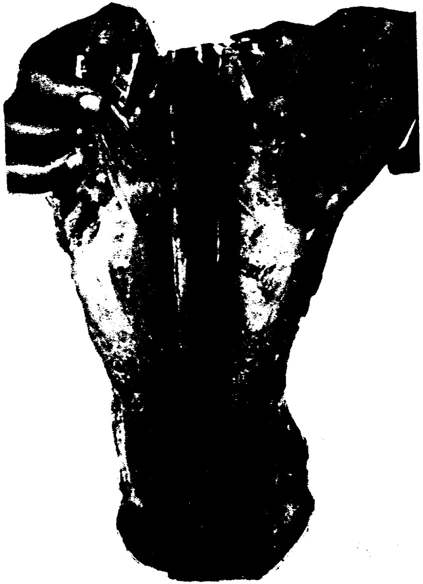

Fig. 2. Interior of the nasal fossae exposed to show the cauliflower-like lesions on the turbinated bones, alae nasi and the nasal septum.

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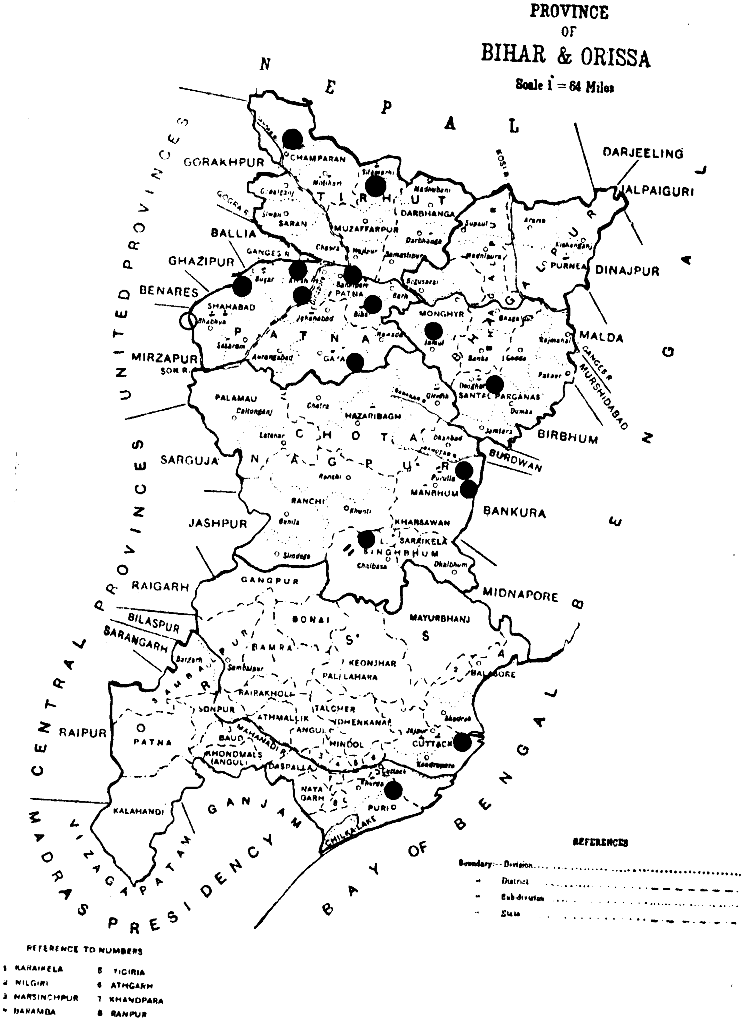

Fig. 3. Map showing distribution of Nasal Granuloma in Bihar & Orissa. The black circles represent the areas in which Nasal Granuloma is known to occur.

the one "adopted in human schistosomiasis (bilharziasis)". The present discovery adds great interest to this suggestion for it shows how very near this commentator had got to the truth.

Oxspring (25) in 1931, studied in collaboration with Cooper an outbreak of Nasal Granuloma in Jubbulpore. He reported that treatment with tartar emetic was very successful and that "an organism of the streptothrix group very similar to streptothrix actinomyces" could "always be found in the lesions and" was "probably responsible for the disease." About the same time Cooper (9) appears to have re-considered his earlier views on the etiology of Nasal Granuloma and come to the conclusion that "since the disease is definitely amenable to treatment with Tartar Emetic and this drug is of great value in the treatment of some protozoan affections such as Kala Azar and Surra, it is reasonable to suppose that Bovine Nasal Granuloma may be due in reality to a protozoan organism."

This account brings the review of the history of Nasal Granuloma in cattle down to the present period. The object of this paper is to record the already promised* (23) details of the author's work which has shown that the actinomycotic theory is no longer tenable and that Nasal Granuloma in Cattle is a form of Schistosomiasis.

GENERAL FEATURES OF THE DISEASE.

The disease usually manifests itself by frequent sneezing and a thick mucous discharge from the nostrils (fig. 1). At this stage the breathing is somewhat embarrassed and examination of the nostrils reveals the presence in some places of irregular areas of congestion and in others of pimply eruptions. As the disease advances the discharge becomes fætid, mucopurulent and sanguinolent, the sneezing becomes more frequent and the breathing is attended with a characteristic snoring noise which is more marked when the animal is grazing. Examination of the nostrils at this stage shows that some of the previous pimply eruptions have become confluent causing a diffuse uneven thickening of the underlying mucous membrane while others have grown into cauliflower-like masses of very vascular granulation tissue in the centre of many of which yellow necrotic foci can be seen (fig. 2.) These lesions appear to extend from the anterior nares to nearly the middle of the nasal cavity and can be felt on the nasal septum, the turbinated bones and the alæ nasi. After a time such growths usually undergo disintegration and are discharged through the nostrils leaving behind raw ulcerated surfaces up to 8 anna piece in size, which are easily seen at the entrance of nostrils. When this occurs the animal is greatly relieved of its embarrassing symptoms but this relief is only temporary because the lesions once again increase in size and snoring re-appears. Such temporary relief also follows surgical removal of the growths which is attended with much hæmorrhage. Observation at this laboratory has further revealed in some cases a rather notable swelling of the superficial lymphatic glands viz. cervical, prescapular and inguinal. In other cases it has been noticed that there are intermittent attacks of polyuria and sexual excitment probably coinciding with the time when this disease is at its height. There is no other constitutional disturbance. The disease lasts for a long time in the animal and is seldom fatal but by rendering animals unfit for work in the plough and producing loss of condition and diminution in milk yield it causes great annoyance and economic loss to the cultivator.

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*On account of the great importance of this discovery both for the cattle owners and contemporary workers a brief announcement of it had to be made by means of a popular public lecture delivered on 18th February, 1932 under the Presidentship of Mr. R. T. Davis, Principal, Bihar and Orissa Veterinary College, Patna. This lecture was reviewed in the Indian Nation 13th March, 1932 and the Indian Veterinary Journal (Vol. VIII-No. 4) April, 1932. A short preliminary note was also published in the Veterinary Record of 9th April, 1932 and it was in this communication that the publication at a later date of the full details of the work was promised.

Nasal Granuloma has not been reported from other parts of the world and appears to be confined to India where it is found principally in Burma, Bengal, Bombay, Bihar and Orissa, Madras, Mysore and the Central Provinces. Even in these provinces the disease shows a curious regional distribution being restricted to low lying marshy localities, which are either irrigated with canal water throughout the year or suffer from inundation during the rains. Its distribution in this province has been fairly fully worked out from the replies to a questionnaire sent out from this laboratory (fig. 3). It is most prevalent in the districts of Patna, Shahabad and Gaya.

In addition to this strictly regional occurrence the disease is characterised by being remarkably seasonal in appearance. Evidence goes to show that fresh cases only occur during the rainy season and that at this time old cases usually become aggravated while during the spring and summer there is definite amelioration of the symptoms.

Further, among cattle there does not appear to be any marked difference in susceptibility to Nasal Granuloma. All breeds of cattle and both sexes are equally affected. It has however been noted that animals below one year usually do not suffer from the disease probably because they are never sent out to graze.

NASAL GRANULOMA IN BUFFALOES.

Perusal of available literature and replies to the questionnaire issued from this laboratory, shows that most of the investigators and

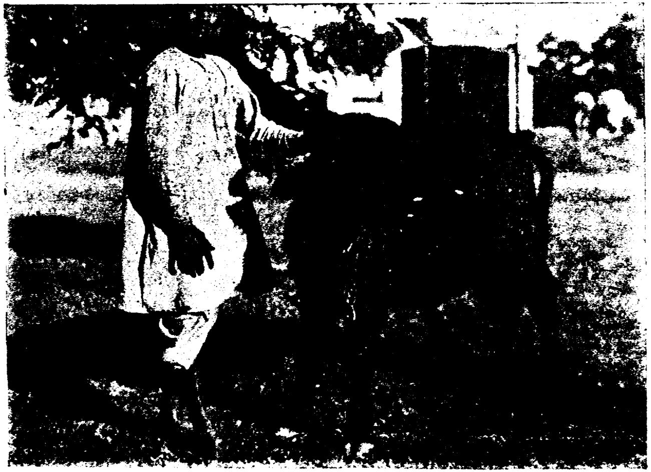

Fig. 4. Buffalo suffering from Nasal Granuloma.

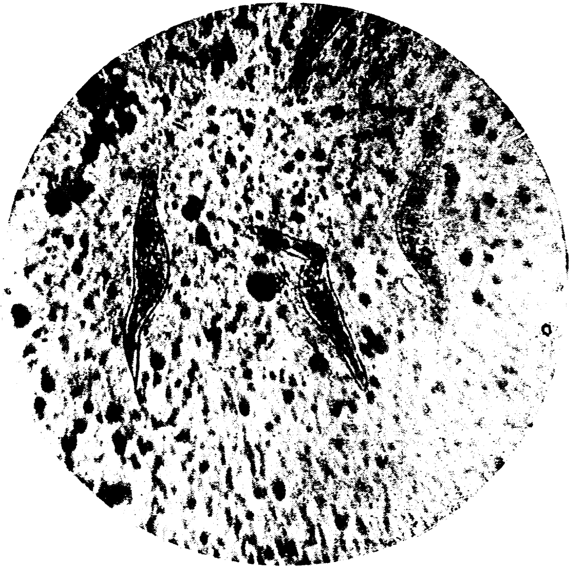

Fig. 5. Cover glass preparation of the nasal discharge from a bullock suffering from Nasal Granuloma, showing characteristic eggs.

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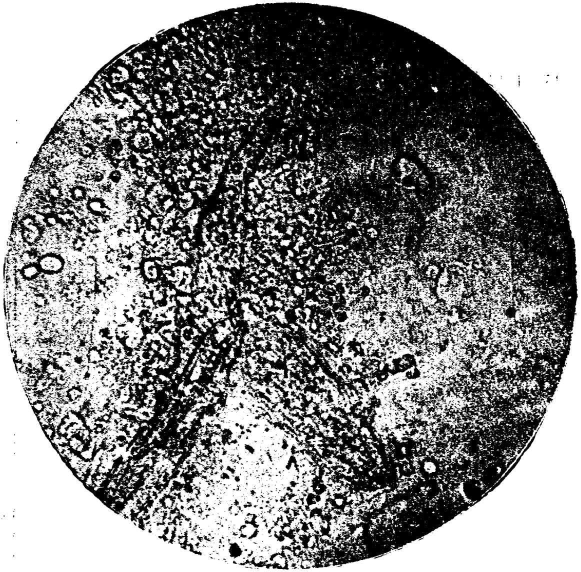

Fig. 6. Cover glass preparation of the nasal discharge showing an egg that has split and liberated the embryo.

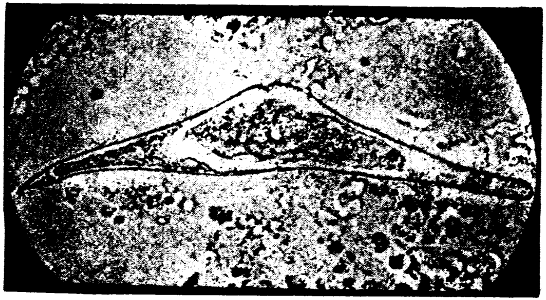

Fig. 7. Ovum of Schistosome spindalis Montgomery, 1906, × 200 ; (after montgomery.)

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workers in the field believe that Nasal Granuloma does not occur in buffaloes. There are some observers, however, notably Mr. R. K. Ram, Veterinary Inspector, Chaibasa and Prof. G. N. Roy Choudhuri who have informed the author that they have seen in these animals rare cases of a disease clinically indistinguishable from Nasal Granuloma in Cattle. At the time of writing the present author has been afforded an opportunity of confirming these clinical observations by microscopic examination of the Nasal discharge from a case of Nasal Granuloma in a buffalo (Fig. 4) which was sent to the laboratory by Mr. Md. Azam, Veterinary Assistant Surgeon, Veterinary Hospital, Bankipore under instructions from Mr. R. K. Ram. This examination revealed the presence in abundance of Schistosome eggs which were all of one type and were indistinguishable from those seen in the case of Cattle. It may therefore be laid down as once for all settled that Nasal Granuloma does occur in Buffaloes. Particulars of the disease as it occurs in these animals will be described in another contribution.

AETIOLOGY.

Ever since the disease was brought to the notice of Veterinary profession, its etiology seems to have engaged the attention of every investigator. This has resulted in the formulation of various theories. Cold, cough, and irritation during thrashing have been individually and collectively accused at different times. The nose string has had a good deal of guilt attributed to it. As these fanciful speculations of earlier workers have very obvious obstacles in the way of acceptance it is not proposed to give them any further consideration. The Actinomycotic theory however was more plausible and attracted great attention among investigators on this disease. For this reason it is proposed to consider its pros and cons in detail. Similarly before discussing the new theory it is proposed to criticise briefly the Rhinosporidium theory which has recently been suggested by Krishnamurti (19) as more likely to replace his earlier actinomycotic theory.

ACTINOMYCOTIC THEORY.

This theory was first put forward by Krishnamurti (18) and later supported by Cooper (7, 8) and Oxspring (25). The direct evidence adduced by these workers brings out two points. All of them have discovered what they allege to be acid and alcohol-fast "Granules and club" formations, resembling those of actinomyces, in sections of growths removed from affected animals. Further one of these authors, Cooper (7, 8), claims to have succeeded in repeatedly isolating from the lesions a pure culture of an organism of the streptothrix group of bacteria.

There are however serious obstacles in the way of accepting this theory. The present discovery and the work of other investigators, notably Beaver (2), Yamagiwa (30), have made it abundantly clear that Club like' formations can be met with in both bacterial and helminthic infections and are therefore not to be regarded as specific evidence of infection with organisms of the streptothrix group. Apart from this there is a striking difference between the structure of granules of Nasal Granuloma and those of Actinomyces. Whereas in Nasal Granuloma the granules are definitely Gram-negative, and it has so far been impossible to demonstrate any micro-organism within them, the Granules in Actinomycosis usually show distinctly gram-positive organisms and filaments in their centre. Further the so-called rays or 'clubs' in the Granule masses of Nasal Granuloma emanate from " what seems to be a kind of basal membrane " surrounding a central space which is usually a hollow cavity and only occasionally " occupied with granular detritus and pus cells ", in typical Actinomycosis granules there is no such central hollow core. Krishnamurti (18) considers this central cavity as being " not improbably due to shrinkage of the radiating elements during fixation of the tissues for histological examination or to the contraction or elimination of the purulent matter in which the granules are embedded." Later on it will however be shown that this central cavity represents the space formerly occupied by the egg ; that the 'granular detritus and pus cells ' sometimes seen in it represent the nuclei of the body cells of the larva that was enclosed in the egg, while the clubs are merely masses of eosinophile cells attracted to the vicinity of the egg in response to the specific toxin liberated by the larva.

There are still other important differences between Nasal Granuloma and Actinomycosis. In Nasal Granuloma the lesions are exclusively situated in the nasal mucosa and never attack the tissues of the tongue and the jaw, quite the reverse is the case in Actinomycosis. Similarly experience in the field and experiments in the laboratory have shown that Nasal Granuloma does not yield to treatment with potassium iodide which is a well known specific against Actinomycosis. Further, all attempts by previous workers, to transmit the disease by administering in various ways all sorts of morbid material and even the alleged isolated streptothrix organism to healthy animals, have been uniformly unsuccessful and this has been abundantly confirmed by the results of many transmission experiments carried out at this laboratory. Again, study of the geographical distribution of these two diseases also shows a difference. Actinomycosis is very common in Europe and very rare in India.

Fig. 8, Cover glass preparation of the nasal discharge from a case of Nasal Granuloma in a buffalo showing the eggs. Note the similarity of eggs with those seen in the case of the bullock.

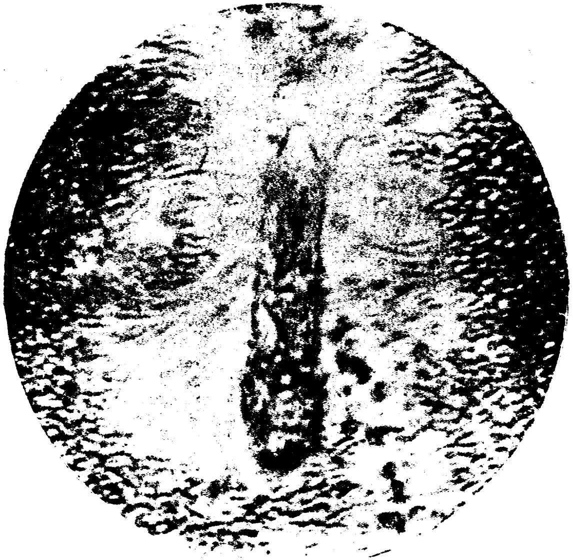

Fig. 9. Cover glass preparation from the nasal discharge of a case of Nasal Granuloma showing a free miracidium.

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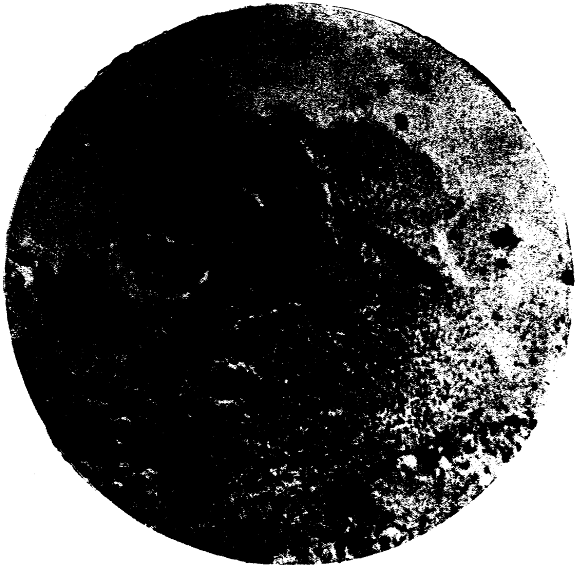

Fig. 10. Section of a growth from the nasal chambers showing the ulcerated surface.

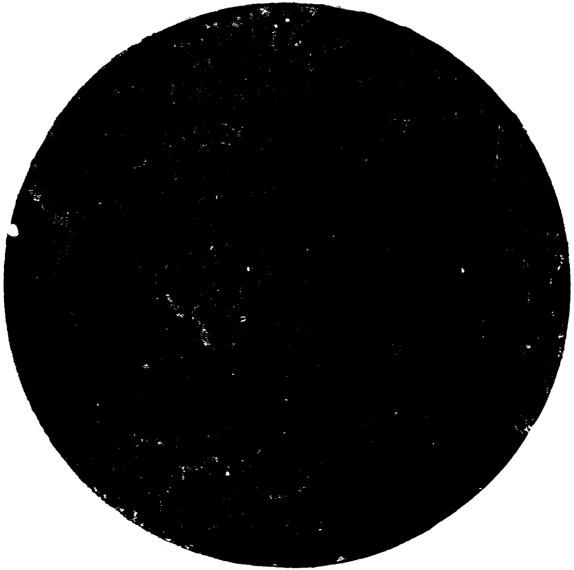

Fig. 11. Section of a growth showing the follicles.

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Nasal Granuloma on the other hand is mainly confined to India and has never been reported from any European country.

Such notable differences in histological structure, predilection seats, response to specific treatment and geographical distribution together with the remarkably uniform failures in transmission experiments render it highly improbable that an actinomyces-like fungus has any etiological significance in Nasal Granuloma. Indeed Krishnamurti (19) himself appears to have shown great uncertainty about the correctness of his earlier Actinomycotic views by suggesting Rhinosporidium as the probable causative organism. Similarly Cooper (9) in 1931 appears to have abandoned this hypothesis in favour of an equally untenable protozoan one. The findings incorporated in this paper now show definitely that this theory is no longer tenable.

RHINOSPORIDIUM HYPOTHESIS.

The suggestion that it "may yet be possible to correlate all lesions found in cattle including those at present believed to be due to streptothrix organism with Rhinossoridium as their cause" was first put forward by Krishnamurti (19) in 1927. He appears to have based this suggestion mainly on the finding that some cases of Nasal Granuloma in cattle were definitely caused by Rhinosporidium and the clinical history of snoring disease resembled that of this disease in human beings. There is however not much justification for such a suggestion. For even if future research confirms the alleged occurrence of bovine Rhinosporidiosis in India, the lesions and histology as described by Krishnamurti himself are so different from those of Nasal Granuloma as to preclude the possibility of these diseases being identical. Further it will be shown later how as a result of the present discovery Nasal Granuloma can be definitely distinguished from any other disease by means of microscopic examination of the nasal discharge.

THE NEW THEORY (SCHISTOSOMIASIS).

Work on Nasal Granuloma has occupied some of the present author's time during last year (1931). The material for this work was obtained from three affected animals which were purchased for the laboratory in October, 1931. Some material was also supplied by the staff veterinary surgeons of the Province. In addition clinical observations were carried out on over a hundred cases that visited the hospital as out-patients. As a result of this work the author has come to the definite conclusion that Nasal Granuloma is nothing else but Nasal Schistosomiasis, the species of Schistosoma responsible for the condition being either *Schistosoma spindalis* Montgomery, 1906, or a very closely related species. This view is based on the evidence afforded by :—

(1) The discovery of the characteristic spindle-shaped eggs and ciliated embryos (miracidia) in direct cover glass preparations of the nasal discharge of all affected animals ;

(2) The discovery of sections of Schistosomes and their eggs during histopathological study of morbid growths as well as the recovery of damaged adults from such growths ;

(3) The recovery of adult Schistosomes with the same characteristic eggs during postmortem examination.

EXAMINATION OF THE NASAL DISCHARGE.

For the purpose of this investigation some samples of the nasal discharge were obtained from the three cases maintained at the laboratory, a few were obtained during field work and others were obtained from over a hundred cases that visited the hospital as out-patients.

As already stated the nasal discharge, when the disease is established, besides being mucopurulent is sanguinolent and usually contains some blood clots. Microscopic examination of direct cover-slip preparations from every sample of such a discharge, specially after it has been somewhat thinned with ordinary tap water or sodium citrate solution, reveals among the blood corpuscles and other catarrahal products, the presence of a large number of eggs *all of which are of one type* and resemble the eggs of *Schistosoma spindalis* Montgomery, 1906 (fig. 5). It might be mentioned here that although these eggs can be found in all portions of the discharge they appear to be most numerous in blood clots in which they occur in entangled masses. Some of the eggs seen are immature showing various stages of segmentation of their contents ; others are fully mature containing within them actively motile ciliated embryos which can be seen to be distinctly enclosed in a vitalline membrane. Some of the ova can be actually seen to split longitudinally liberating the enclosed miracidia. (fig. 6). The consensus of opinion among workers on bilharziasis appears to be that miracidia are only set free when the eggs come in contact with water. The present work of the author has however shown that this is not always so. In the nasal discharge specially from animals showing acute symptoms one can find miracidia without the addition of water or the pressure of a coverslip. Preparations from the buffalo seemed to be specially rich in miracidia and empty shells of eggs, Besides the mature and immature eggs one finds others whose shells are somewhat shrunken

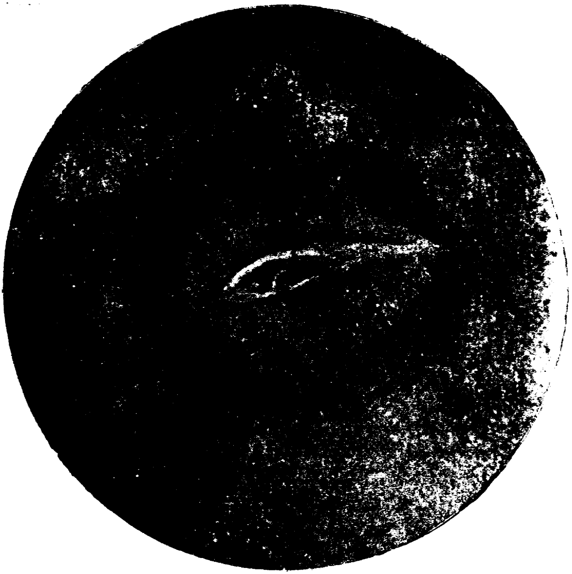

Fig. 12. Section of a growth showing the concentration of Eosinophiles round a cavity occupied by an egg in which a well defined embryo can be seen.

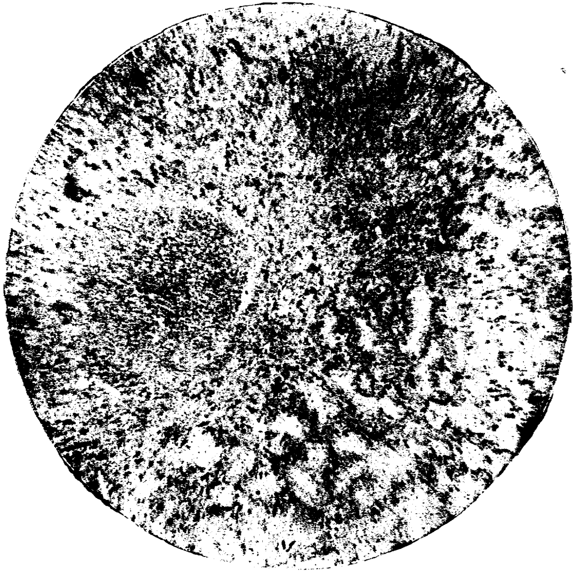

Fig. 13. Section of a growth showing an Eosinophile abscess.

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Fig. 14. Section of a growth showing the empty space which bears close resemblance to the characteristic eggs seen in the nasal discharge.

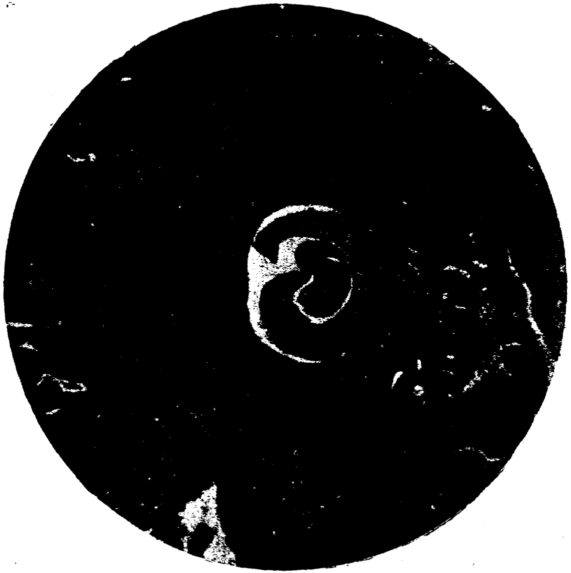

Fig. 15. Section of a growth showing transverse sections of the parasites (male and female in copula) in situ.

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and whose contents are black and amorphous. Such eggs are found specially in cases in which the lesions have retrogressed either naturally or as a result of treatment, and no doubt represent as suggested by Christopherson (4, 5,) ova that have died either as a result of tissue reaction or the lethal effect of the sepecific drug.

The ova as seen in the nasal discharge resemble those of *Schistosoma Spindalis* Montgomery, 1906, in being greatly elongate, spindle shaped (fig. 7). They possess a well defined cuticle which at one end is bluntly rounded and at the other forms a spine which is not quite sharp, has a rounded tip and is slightly bent ventrally. Viewed in the lateral position the egg may be said to have the form of a triangle the lower border of which instead of being straight as is the case in the ova of *Schistosoma spindalis* Montgomery, 1906, is definitely concave the concavity varying from a slight to a deep one so that the egg has the appearancc of Napolean's hat. In length the immature ova in which the embryo is not defined measures from 332 μ to 392 μ long (inclusive of spine) and from 41·5 μ to 67 μ broad. Mature ova containing fully developed embroys measure from 400 to 581 μ long. In width they measure 67 μ to 83 μ across the bulged portion. The spine in the majority of cases varies from 3·3 μ to 9·9 μ. In one case it was found to be 11·5 μ and in another 13·2 μ. It has been found that the more mature the ovum, the less is the length of the spine. This appears to be the case in all schistosomes. The ova seen in the nasal discharge from buffaloes are exactly like those seen in cattle both in appearance and dimensions (Fig. 8.)

The addition of water to the nasal discharge rapidly brings about in mature ova, from which miracidia have not already escaped, vacuolation between the shell and the embryo which soon shows vitality by repeated jerky movements. It soon becomes surrounded by vacuoles discharged from its body and as a result of rapid ciliary movement these vacuoles also show active and vibratile movements. After some time the shell in some of the ova is seen to split in a longitudinal direction and the embryo is liberated. The liberated embryo (Fig. 9) is somewhat pearshaped, the blunt extremity bearing the cephalic prolongation. It measures from 98·4 μ to 224 μ in length, according to the state of contraction and extension, 49 μ to 83μ in breadth at the broadest part. The whole of the outer surface, with the exception of the minute papillary beak, is very thickly provided with backwardly directed fine cilia about 8μ in length. This ciliated embryo swims and gyrates very actively and readily changes its shapes by various contractions of its body. In a coverslip preparation it can be readily seen that the embryo when it comes against any obstruction tries to bore its way with the anterior extremity which carries the protrusible terminal stilet.

The anterior extremity carries the stunted blunt head. A fine canal runs from this, enters a saccular dilatation the so-called rudimentary stomach. On either side of this rudimentary stomach there appears to be a small gland-like organ from which a delicate duct passes forward to open some where in the neighbourhood of the beak. The rest of the body of the larva is filled with a number of sarcode droplets.

The miracidium found in the case of buffalo does not differ from that seen in cattle.

EXAMINATION OF URINE.

Several specimens of urine from affected animals have been centrifugalised and examined but so far in no case have any schistosome eggs been found. The urine is usually quite clear without any catarrh or blood. In some cases bile pigments have been observed in samples of urine.

EXAMINATION OF FÆCES.

Examination of the fæces has been carried out by direct cover-slip preparation and by the sugar floatation method. In addition to this portions of the rectal mucosa snipped off the rectum as in Johne's disease have been teased in normal saline and examined. Such examination has so far failed, in both cattle and buffaloes, to reveal any eggs of the spindalis type, but on some occasions eggs indistinguishable from those of the *Schistosoma bomfordi* Montgomery 1906, have been found. The appearance of these eggs in the fæces is due to the fact that as revealed by postmortem examination, an animal affected with nasal schistosomiasis appears also to harbour other species of schistosomes the eggs of which seem to select the rectal mucosa for their exit from the definitive host. The absence of the spindle shaped egg from the fæces of the affected animals must constitute an important difference, among others, between the parasite of Nasal Granuloma and schistosoma spindalis because, the eggs of the latter as shown by the work of Montgomery (24) and Liston and Soparkar (22) are usually voided with the fæces.

EXAMINATION OF THE BLOOD.

Examination of the blood smears from affected animals is uniformly negative for bacterial or protozoan parasites but always reveals an excessive eosinophilia. The most noteworthy phenomenon that has been seen at this laboratory is in connection with the clotting of the blood taken from affected animals. When the

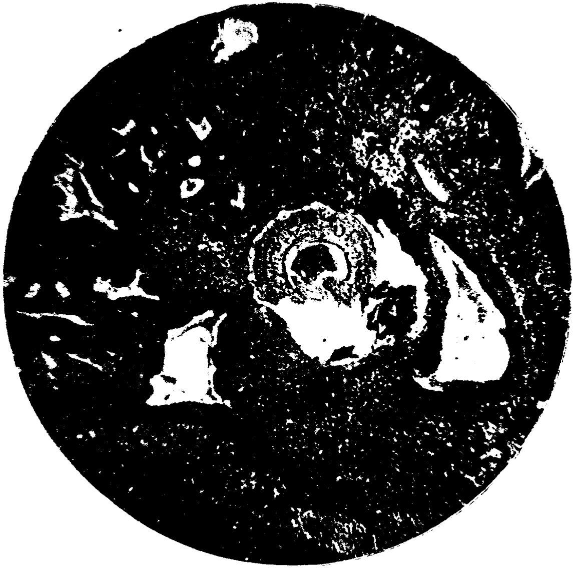

Fig. 16. Section of a growth showing rupture of the vessel containing the parasites (male and female in copula.)

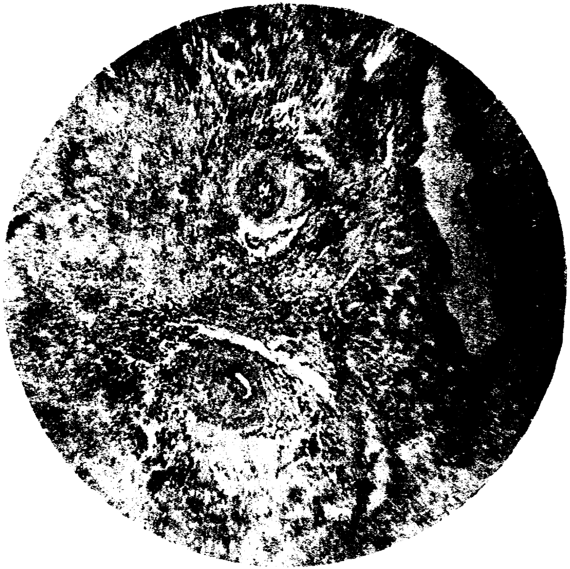

Fig. 17. Section of a growth showing endarteritis.

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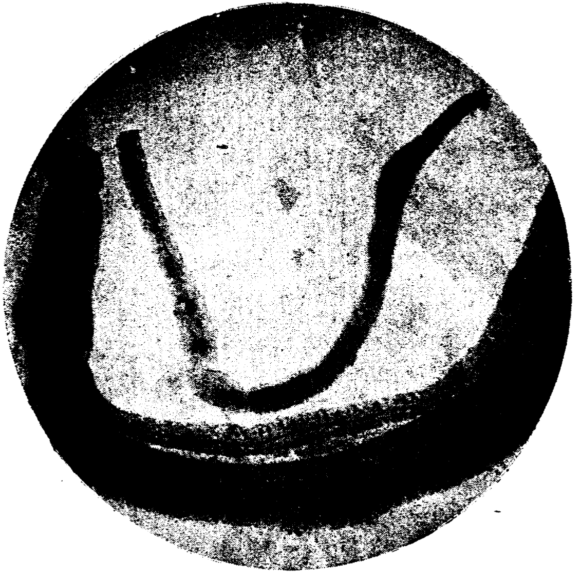

Fig. 18. Damaged male and female (in copnla) isolated by teasing the growths.

To illustrate the article on Nasal Granuloma in cattle, by Prof : P. G. **Malkani, Page** 257 blood is collected from the jugular into a test tube it appears to clot quite normally but the clot does not retract with the result that no serum is expressed even after three days in the worst affected animals. This inability of the clot to retract has been observed only in the affected animals and has not been seen in the case of others. Further it also appears to be directly proportional to the severity of the disease being very marked in the animal that is most affected and just noticeable in the animal that is least affected. These findings require further study. A similar phenomenon is observed in one of the human diseases at present grouped under the so-called Hæmorrhagic diatheses, namely Wrelhoeff's disease, in which as a result of the thrombocytopaenia although the coagulation rate is normal the clot fails to retract.

HISTOPATHOLOGICAL STUDIES.

Morbid material for author's histopathological studies was obtained mostly from the three affected animals maintained at the laboratory. A few growths were removed from cases in the field by the laboratory staff and a few others were submitted to the author for examination by the veterinary staff of the province.

INSPECTION.

The growths dissected out from the nostrils are usually very soft and friable and are greyish-red in colour. Examination of the base of these growths shows that they must have been intimately adherent to the nasal mucosa. Their outer surface shows few black points and is very irregular. At some places it shows definite signs of ulcerative destruction while at others it presents a distintly worm-eaten appearance. These large growths are usually lobulated, cauliflower-like, and frequently attain the size of a walnut. On closer examination they are found to be composed of densely packed smaller nodules varying in size from a millet seed to a large pea. Many of the large growths show necrotic foci externally and when incised show in their interior a varying number of minute abscesses.

MORBID HISTOLOGY.

Examination of sections of such growths reveals a typical picture of highly vascular granulation tissue formed as a result of chronic inflammation of the submucous and mucous layers of the nose. One finds evidence of the irritant and the many degenerative changes caused by it such as congestion, cloudy swelling, fatty degeneration, necrosis, minute ulcers and abscesses, together with marked cellular infiiltration for the purpose of removing the irritant or delimiting its activities and proliferation of fibroblasts and vascular endothelium to replace destroyed blood vessels and connective tissue and to organise the fibrin. The composition of this granulation tissue varies with the age of the growth. Early growths are mainly composed of young vascular tissue while in older growths dense fibrous tissue preponderates.

Outwardly the continuity of the epithelial lining is broken at places by ulcerated areas which are covered with a reticulum of fibrin in the meshes of which are included many red blood cells and numerous leucocytes and new capillaries indicating attempt at organisation (fig. 10). In the texture the most important changes seen are in connection with (1) Cellular infiltration and fibrous tissue formation (2) the blood vessels and (3) the coils of mucous glands.

The most characteristic change seen in the texture is the extensive infiltration with various types of cells. Some of these cells are of the round cell type, others of the endothelial type and only a few are of the poly-morphonuclear type. Many of these cells are found collected together round ova of the parasite in the form of what Fairley has termed Bilharzial pseudotubercles (the so-called follicles of Krishnamurti) forming many giant-cells systems like those that are usually formed around foreign bodies (fig. 11). In some places, this appears to have been followed by infiltration by eosinophile and fibroblast and later by encapsulation. The great majority of the infiltrating cells seen in the granulation tissue are of the Eosinophile type. These cells are so numerous and the sections so literally studded with them that it would appear that they constitute the chief cytological response to the bilharzial toxin. These cells are quite noticeable in Hæmatoxylin and Eosin preparations but they are shown to greater advantage when Leishman's stain is used. This excessive amount of eosinophilia is revealed not only by examination of the sections but also by examination of the blood and the nasal discharge. This eosinophilic infiltration is diffuse in some parts of the section. In others, especially in the neighbourhood of the eggs, the eosinophiles are aggregated into round somewhat well circumscribed masses having the appearance of tubercles disposed round a cavity. In many cases this cavity is hollow and some of these hollow cavities have striking resemblance to the shape of the egg of the parasite. In other cases these spaces are seen to be occupied by eggs enclosing well defined embroys in their interior (fig. 12) and in still other places one finds a fully developed miracidium in this cavity. In some places a cavity is entirely absent and then the aggregated masses of eosinophile cells have the appearance of abscesses like the eosinophilic abscesses seen in Trichinosis (fig. 13) These lesions are chiefly confined to submucosa showing that the eggs are generally deposited in this layer and that the distribution of microscopic lesions corresponds with the blood supply. From the descriptions given by Krishnamurti (18) and Cooper (7, 8) of the histology of these growths it would appear that both these authors have looked upon these agglomerated masses of eosinophiles as the "ray" or "club" formations of an actinomyces-like fungus.

In some parts of the section one notices necrotic foci and suppurating centres corresponding to those seen during naked eye examination of the growths. One also finds scattered all over the section empty spaces of various shapes, many of which bear a close resemblance to that of the spindle shaped eggs seen in the nasal discharge (fig. 14). There is no doubt that these spaces represent the places formerly occupied by the eggs which have been removed as a result of tissue reaction against them.

The next most important changes are those seen in connection with the blood vessels. There is active proliferation of the vascular endothelium with the formation of a large number of capillary loops. These capillaries are specially numerous in ulcerated areas. It is the presence of these numerous capillaries which explains the excessive hæmorrhage which frequently follows surgical removal of the growths. The larger blood vessels in the depth of the section specially the veins, show in their interior, transverse sections of schistosomes, some of them single, others in coupla (fig. 15). Such veins also show considerable dilatation and endophlebitis. In some cases the vessel wall is quite in tact; in others it has been ruptured and hæmorrahage has occurred into the extravascular tissue (fig. 16.). In the majority of cases the parasites in the vessel wall show no sign of degeneration so that the endophlebitis seen must be attributed to the toxin liberated by the parasite. Around some of the veins containing the parasites there can be seen the same kind of cellular infiltration with formation of large plasmoidal Giant cells, eosinophile infiltration and fibrosis as seen around the eggs, giving rise to similar pseudotubercles, finally leading to obliteration of the vessel. It must be stated here that although eggs and the eosinophile tubercles are always found, sections of the adult parasites are not met with in every growth. They are most likely to be found only when large growths taken from an animal showing acute symptoms are studied. Such large growths are usually found higher up in the nasal fossæ. This is probably the reason why previous workers failed to observe them during their studies.

Other vessels, specially the arteries, show varying degrees of endarteritis up to the stage of obliteration of the lumen in some cases. (Fig. 17.).

In the submucosa are a large number of coils of mucous glands In some of these one can find signs of degeneration varying from cloudy swelling, fatty degeneration to necrosis. There are others which show signs of excessive secretion.

On carefully teasing a growth that showed sections of the parasites on histological examination, the author was successful in isolating damaged males and females in copula. (Fig, 18).

POSTMORTEM EXAMINATION.

It has been already mentioned that Nasal Granuloma is seldom fatal. Besides destruction of cattle for experimental observations meets with such a religious resentment in this country that one cannot resort to it freely. It is probably for this reason that no previous investigator has recorded any postmortem findings. At this laboratory however one affected animal was destroyed with chloroform by Mr. R. T. Davis, I.V.S., Principal, Bihar and Orissa Veterinary College. This animal, a bullock over 12 years old, had been suffering from the disease for over two years. At the time of destruction he was showing acute symptoms of the disease but his condition was otherwise fair and his external appearance did not show anything unusual.

Examination of the abdominal cavity revealed congestion of the portal system as well as enlargement and distention of the mesenteric vessels. The liver was slightly congested, showed a few gray nodules on its surface and in certain places showed mild cirrhotic changes. The kidneys showed slight congestion. The bladder contained about 2 ounces of clear urine; its mucous membrane showed only a few petechial marks. The spleen and the stomach showed nothing unusual. In the intestinal tract the duodenum showed some small pea to large pea sized nodules and for about 3 ft. showed great congestion. The ileum and the jejunam were deeply congested throughout. The cæcum showed petechial marks and ecchymotic patches in other parts. The rectal mucosa showed nothing unusual. Similarly the mouth, pharynx and the oesophagus did not show any morbid changes.

In the respiratory tract, the nasal fossæ showed the most characteristic changes. The vomer, the septum nasi and the turbinated bones were intensely congested. Granulomatous growths of various sizes were present on all the turbinated bones, latteral alae and the septum nasi extending from the anterior nares up to about the olfactory region of the nasal fossæ. (Fig. 19). From the distribution of the lesions it would appear that the Schistosomes must have reached the nasal fossæ by way of the spheno-palatine vessels.

The larynx showed on both sides small pin head sized elevations. The trachea showed nothing unusual. The right cardiac lobes of the lungs were adherent to the parietal pleura by means of a fibrous band and the right diaphragmatic lobe contained a tennis ball sized hydatid cyst. Nothing unusual was found in the pericardium or the heart.

Collection of Schistosomes:—These parasites were mostly obtained from the mesenteric blood, portal vein and the liver. In the case of the mesenteric blood, all the blood that fell into the peritoneal cavity after removal of the intestines and cutting of the main branches of the portal system was collected in beakers. Samples of this collected blood were then poured into a white enammelled tray, some water added and careful search made for the parasites. Many of the worms were in copula. The males were found as small white bodies coiled up in the form of a letter "C" and were undergoing various changes in shape. The females only found in copula were found to be hair-like structures about twice the length of the male and much darker in colour.

The majority of the parasites were obtained from the liver. The organ was removed from the body. The portal vessel still attached to it was then opend and its blood collected in the dish. Pressure was then applied to the liver to get more blood. The organ was then freely incised, .then cut up into small portions which were then placed in a bucket and as ·much of the fluid as possible was then expressed out of them. The blood thus collected was then examined for parasites in an enammelled tray. The majority of the worms were in copula ; only a few were single males ; no single female was found.

Detection of the ova :—Examination of the scrapings from the rectum, other parts of the intestine, and bladder did not show any eggs. As most of the time was taken up in search for the parasites in the liver and the mesenteric blood, continued examination of the scrapings of the rectum and intestinal tract could not be made. In view of the finding of two other types of the Schistosomes the author believes that a more detailed search of the intestinal tract would have revealed the presence of the types of eggs, which as already stated were seen in pieces of mucosa snipped off per rectum.

Microscopic examination of the eggs in the females of the worms found in copula showed that there were at least three species. One of them contained the eggs exactly like those seen in the nasal discharge ; these worms were only found in the liver.

Another contained an egg which resembled the egg of the *Schistosoma bovis.* And the third contained an egg which does not appear to have been described so far. The author proposes to record these findings in a separate communication and describe the hitherto undescribed egg of what appears to be a new species of Schistosome.

From the few specimens of adult parasites, the females of which were all in copula and showed eggs which were indistinguishable from those seen in the nasal discharge it was not possible to get complete morphological details. Descriptions of the adults are therefore held in abeyance, pending the study of a large number of Schistosomes, which the author hopes to·get in the near future, from the rearing experiments that are being carried out at this laboratory.

The morphology of the eggs in utero, however, was quite clear and constant. As found in the uterus they were numerous and occurred in rows of one and two. When two eggs were found together they were usually found to be lying with their concave borders facing each other. These eggs in the uterus were identical in shape with both the immature and mature ones found in the nasal discharge. Their contents however filled the shell and were dark and granular. On an average they measured 232 microns long; 49·8 microns at the widest part of the bulging; 9·9 microns across the spinal extremity and 13·0 microns across the other prolongation. The spine measured 9·9 microns long. A few ova were found in the extrauterine situations, apparently having been extruded by the female in the gynecophoral canal. Their average dimensions were as follows:—

Length 273·8 microns; width 49·8 microns; length of spine 9·9 microns.

REMARKS AS TO SPECIFICITY.

The morphological details of the adults have not been obtained. This however need not affect our tentative conclusions of the identity of the Schistosomes because as pointed out by Sambon, the Schistosomes of man and cattle are very much alike in general appearance and structure and the most characteristic and striking difference is that of their eggs which differ markedly in each species.

The only species of Schistosomes known to possess ova corresponding to those found in the nasal discharge are the ***Schistosama spindalis*** of cattle, first discovered by Montgomery (24) from India and later reported by Vryberg (29) from Sumatra, and the unfigured spindle shaped egg described by Christophers and Stephens (3) in the urine of a Madras native. The dimensions which Christophers and Stephens give for their eggs (205 microns by 53 microns) differ so whidely from those of the egg found in the nasal discharge that any connection between the two is improbable.

Likewise there appear to be some important points of difference between the *Schistosoma spindalis* and the Schistosoma of Nasal Granuloma. The egg of *Schistosoma spindalis* as described and figured by Montgomery (24) has the form of a triangle in which the base is almost straight and there is a notch at the apex, which is otherwise rounded. In the egg seen in the nasal discharge however the base of the triangle is in the majority of cases definitely concave, there is no notch at the apex, and the latter is also more rounded. Further Montgomery describes the spines of *Schistosoma spindalis* as straight pointed with no tendency to the hook like character and measuring 14—15 microns in mature ova. The length of the spine of Nasal Granuloma eggs varies from 3·3 microns to 9·9 microns but never exceeds 10 microns, in the majority of cases. In only one specimen it was 13·2μ. The spine is also not quite straight pointed. In some it is distinctly bent and tends towards the blunt. There is also some difference in dimensions of these eggs. The maximum dimensions in the eggs of *Schistosoma spindalis* Montgomery, are length 400 microns, breadth 44 microns. Those of the eggs of the parasite of Nasal Granuloma are:—length 581 microns; breadth 83 microns. It has been mentioned that examination of the fæces and even the rectal scrapings fail to show eggs similar to those seen in the nasal discharge. The work of Montgomery (24), Liston and Soparker (22), and Vryberg (29) has however shown that *Schistosoma spindalis* mostly affects the alimentary canal and its ova are usually found in the fæces and no nasal lesions in animals affected by it have been recorded by these authors.

There are therefore sufficient anatomical differences of the egg which together with differences in predilection seats and the clinical features of the disease would justify the tentative conclusion that the Schistosome responsible for Nasal Granuloma is somewhat distinct from *Schistosoma spindalis* Montgomery, 1906. It is well known that the ova of *Schistosoma haematobium* are always discharged through the bladder while those of *Shcistosoma mansoni* through the rectum and the only difference between them is the presence of a lateral spine in the case of *S. mansoni* and a terminal one in the case *S. haematobium.* Further work now being carried out at this the laboratory will show whether this tentative conclusion is correct or not. Should the specificity of the parasite be admitted the name *Schistosoma spindalis var nasale*, as indicating the special location of the parasite, would appear to the author, as the most suitable one.

DISCUSSION.

The results of these investigations show clearly that the definite cause of Nasal Granuloma in cattle is a species of Schistosome, and it can be shown that all the features of the disease are in perfect consonance with this theory. The strictly regional and seasonal distribution of this disease is due to the fact that such localities and seasons provide just the conditions for the Intermidiate hosts the snails, and the high enzootic index of the disease will be seen to coincide with the concentration of the particular snail which acts as the intermediate host of the parasite. In Egypt endemic hæmaturia is likewise restricted to the neighbourhood of the Nile and irrigated areas and this appears to be the case with all forms of Schistosomiasis. It is now easy to understand why it has so far been found impossible to convey infection by ingestion and inoculation experiments. It becomes clear how water and grass infected with cercariæ can convey infection to healthy animals. It is likewise easy to explain why Nasal Granuloma occurs only in India and not in other countries as the particular Schistosome appears to exist in India only. This has a parallel in *Sehistosoma haematobium* which is very common in Egypt but is notably absent from India. The chronic nature of the disease is also in keeping with what obtains in other cases of Schistosomiasis, some of the cases in human beings lasting for ten years or more. It can now be explained why treatment of Nasal Granuloma with potassium iodide has failed while treatment with tartar emetic has been so successful. This drug has been found by Christopherson (4, 5, 6) and many workers all over the world to be very nearly a specific in human bilharziasis and similar good results have been recorded in animal bilharziasis by Low and Newham as stated by Hutyra and Marek (16).

Histogenesis :—One can now understand the genesis of the peculiar lesions in the nostrils. As in other schistosomes the cercariæ which are the infective forms of the parasites enter the skin or mucous membranes and travel by veins or lymphatics to the right side of the heart from where they make their way to the liver, where they attain maturity. When mature, the worms, mostly in copula, leave the liver and travelling by the venous trunks reach the submucosa of the nose. Having established themselves in the veins of the nasal submucosa the fertilised females start to discharge their eggs (usually intravenously) which then work their way through the tissuess to the exterior by means of their spines. Partly as a result of this repeated mechanical injury but mostly as shown by the work of Leiper (21) and Fairley (13, 14) by the cytolytic toxins of the larva exuded through the eggs as well as that of the adults, there begins a subacute or chronic inflammatory reaction consisting of, in early stages, an infiltration with round mononuclear, endotheliod and polymorphonuclear cells, so that the histology of the earliest lesion is somewhat similar to that of a tubercle in which the cellular elements surround the irritating ova or parasites. This infiltration is for the purpose of removing the irritant by the lytic process, and the death of the ova and adults in situ sometimes seen in sections is due partly to this local reaction and partly to the general systemic response. When this attempt at removal has failed the reaction of the surrounding tissues sets free the fibroblast and the eosinophiles to delimit the activity of the irritant by forming a capsule round it. The extent of the eosinophilic infiltration would appear to indicate that this cell constitutes the main response to the bilharzia toxin. The granulation masses produced as the result of this reaction cerrespond with the lesions produced by *Schistosoma haematobiam* in the bladder and those produced in the rectum by *Schistosoma mansoni.*

These findings not only provide us with an easy method of diagnosing Nasal Granuloma with certainty but also afford us a ready means of checking the beneficial effects of the treatment with tartar emetic for, as shown by Christopherson, (4, 5, 6) apart from Fairley's complement fixation test, the microscope is the only sure means of estimating the total amount of drug necessary to be given in a particular case. The injections are to be pushed to a stage when no more eggs or only dead dark and shrivelled ones are visible in the discharge. This fact must always be borne in mind because even after the subsidence of the clinical symptoms the animal may still be a bilharzia carrier by discharging eggs which are able to hatch.

It might be mentioned in passing that as stated by Bayliss (1), Porter in South Africa has observed the occurrence in human beings who have been closely associated with cattle or goats, a species of Schistosome which he has termed *Schistosoma spindalis* var africana. A search for a similar parasite in human beings in affected areas might yield interesting results. It is quite possible that the unfigured egg discribed by Christopher and Stephens (3) in the urine of a Madras native might be a variety of the spindalis type met with in animals.

The present discovery also enables us to suggest definite prophylactic measures. Inspection of the fodder and pastures should be carefully done and if possible animals should not be allowed to graze during the periods when Nasal Granuloma is common. Attention should also be directed to the quality of the drinking water, tanks, pools and ditches being avoided. There are however obvious difficulties in observing all these precautions. Considering the small size of cercariæ and their abundence during season it is highly improbable that the animals will escape infection. Fortunately in tartar emetic we have not only a curative but also a valuable prophylactic agent, for this drug not only kills the adult parasites but also destroys their eggs and thus prevents their further multiplication. There is therefore no reason why systematic application of this medicine should not succeed in eradicating this disease from any affected area.

CONCLUSIONS.

(1) Nasal Granuloma is a form of Schistosomiasis in which the lesions are confined to the nasal mucosa which is selected by the parasites for discharging their eggs to the exterior.

(2) The species of Schistosome responsible for the condition resembles somewhat the *Schistosoma spindalis* Montgomery, 1906, but shows some distinctive features which would justify the tentative conclusion that it is a distinct species.

(3) Nasal Granuloma does occur in Buffaloes although rarely and the species of schistosomes responsible for the condition appears to be identical with the one responsible for the disease in cattle.

(4) Tartar emetic is not only a curative but a valuable prophylactic in this disease. Its systematic application would result in complete eradication of the disease.

(5) Microscopic examination of the nasal discharge is the best means of diagnosing the disease and estimating the total amount of the specific drug required in a particular case.

ACKNOWLEDGMENT.

I take this opportunity of expressing my gratitude to Prof. R. T. Leiper of the London School of Tropical Medicine Hygiene for helpful advice given during personal conversation in London. To Mr. R. T. Davis, Principal, Bihar and Orissa Veterinary College. I am indebted for the facilities he had given me during this investigation and for taking the trouble of destroying one bullock for postmortem examination. Thanks are also due to Prof. G. N. Roy Choudhuri who has given all possible help for observations to be carried out on out-patients coming to the hospital. The Veterinary surgeons all over the province have also shown creditable promptness in their response to my questionnaire. I also wish to place on record my appreciation of the patient and enthusiatic manner in which my laboratory assistants and demonstrator have worked thoughout this investigation.

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CERCARIA KYLASAMI, SP., NOV.*

BY

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This cercaria was obtained only from *Planorbis exustus* (Deshayes) during the early part of this year. Out of over 500 snails collected from the Spur Tank, Egmore, only 22 discharged these cercariae. Round about Spur Tank a fairly large number of *dhobis'* donkeys and other cattle are seen grazing and they all drink water out of this tank. So far, it has been found that that tank contains mollusca fairly heavily infected with many kinds of cercariae.

DESCRIPTION OF THE LARVA.

It is a fairly large cercaria, light brown in colour, extremely active and swims vigorously in water with its tail uppermost. The movement is characteristic and is common to all amphistome cercaria. The cercaria while swimming suddenly stops all movement and elongates its body or sometimes curls it ventrally, or contracts it to such an extent as to make it appear reniform and swims again. When viewed under the microscope between a slide and cover-slip, with moderate pressure, its body is lanceolate in shape, with the tail attached to the wide end. The attachment of the tail is slightly dorsal. The body being flexible and extensile, the measurements may not be reliable; hence a camera lucida drawing of one specimen is appended with scale for making the necessary measurements if one so desires (Plate XXII, fig. 1.)

The cuticle of the cercaria is thin but fairly rough. Under it, there is a large number of cystogenous cells containing rod-like granules and also pigment granules. There are two conical eyes, each having a beautiful convex lens at the base of the cone and directed upwards and outwards.

The oral sucker is at the anterior end of the body and is well developed. It has round it a rim of cuticle with a sinuous margin. The pharynx seems to be fused with the oral sucker making it appear elongated. There are two lateral diverticulae at the commencement of the oesophagus, which begin in an infundibuliform opening at the posterior end of the oral sucker. The oesophagus bifurcates, into two intestinal cecae, some distance behind the level of the eyes. Just before its bifurcation, the oesophagus becomes muscular with muscle fibres running longitudinally. Two intestinal glands one from each

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*Reprinted from the Indian Journal of Veterinary Science and Animal Husbandry Vol. II Part 3.

Plate XXII.

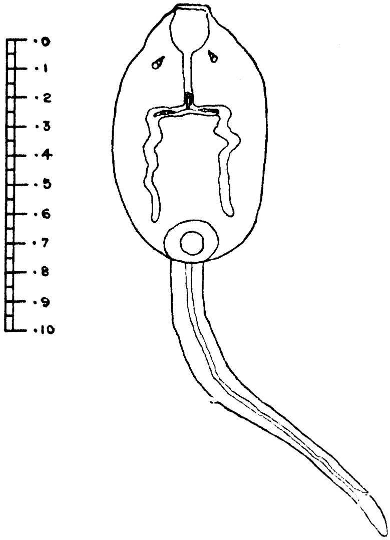

Fig. 1.

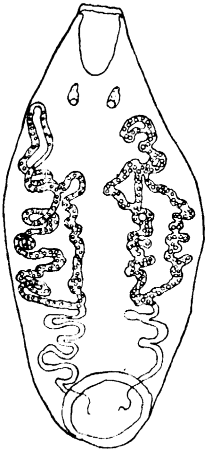

Fig. 2.
C. *kylasami* shownig
excretory system.

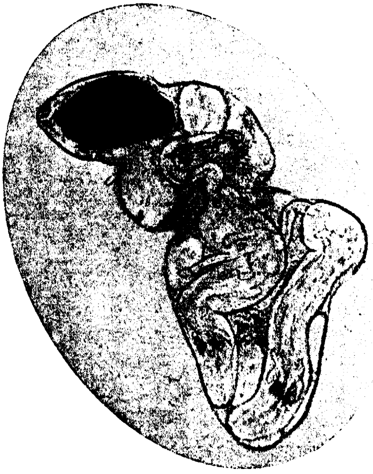

Fig. 3.
Redia. C. *kylasami*.

Courtesy : "The Imperial Council of Agricultural Research."

cecum, open their ducts into a common atrium in the centre of this muscular portion. Each gland floats free in the lumen of the intestinal cecum and is held, apparently, by the end of its duct attached to the muscular portion of the oesophagus. Perhaps, these glands have a digestive function. The two intestinal cecae almost reach the posterior sucker after a fairly wavy course, the ends being bluntly rounded and not coiled up spirally as in *Cercaria indicae* No. XXI Sewell (1922).

The excretory system is composed of a bladder situated in front of the posterior sucker, the excretory tubules opening into it. There is one set of tubules on each lateral half of the parasite. Each main tube can be traced from the excretory bladder going forwards with a tortuous course and replete with excretory granules. It turns backwards just behind the eye and with a more tortuous course it gets broken up into smaller tubules as it turns again forwards near the posterior sucker. The excretory granules are present in the retrograde tubule also and they disappear, however, in the tubules in the posterior third of the parasite. The finer tubules and flame cells could not be traced out owing to opacity of the body of the larva. This opacity is due to the presence of brownish pigment and cystogenous cells, under the cuticle. The interesting and important feature is that there is no cross-connection between the main tubules of each side. The excretory pore of the bladder opens dorsally. The tail is fairly wide at its junction with the body of the larva and tapers towards its free extremity which is blunt and rounded slightly. It is muscular and contains a few granules, thrown in between the muscle fibres. There is a caudal canal which runs from the bladder, to almost the end of the tail where it dilates into a pear-shaped cavity, from which two small canals open to the exterior.

The genital system is seen in the shape of two masses of cells, placed one behind the other, about the median line in front of the excretory bladder. These are perhaps the future testes. Another mass of cells is seen a little to the side of the bladder and this is perhaps the future ovary.

These cercariae develop in rediae. Each redia has a mouth which leads into a short gut full of ingested dark material. A few glands are present round about the gut and these open in the mouth. There is a birth pore some distance behind the oral opening. There are two pairs of locomotor appendages. Each redia contains about three or four almost mature cercariae wanting in pigment granules and five or six immature cercariae. In young rediae three pairs of flame cells are seen. The anterior pair is a little behind the level of the termination of the gut and the next two pairs are at the level of the anterior and posterior pairs of locomotor appendages respectively (Plate). XXII.

DISCUSSION.

Sewell (1922) divides the amphistome cercariae into two groups, (1) the Pigmentata group and (2) the Diplocotylea group. He was able to discover only one example, *Cercariae Indicae* XXI, which he included provisionally under the Diplocotylea group created by him. The characters of this group are described by him very well and the salient points are as under :—

1. Presence of pharyngeal pouches.
2. Absence of cross-connections between the main excretory canals found on each side of the body.
3. Presence of two pairs of locomotor appendages in the redia.
4. The cercariae leave the redia while still immature and complete their development in the tissue of the mollusc host.

The cercaria described above presents all these points; therefore this has been placed under the Diplocotylea group. It differs from *Cercariae indicae* XXI Sewell, in showing what look like oral diverticulae, in having excretory granules in the main tube and also in its retrograde continuation, and in having bluntly rounded extremities of the intestinal cecae, It is, therefore, considered that this cercaria is different from the one described by Sewell and I propose to name it "*Cercaria kylasami.*"

My thanks are due to Mr. S. Vaidynatha Mudaliar, Assistant Lecturer, for the help rendered by him.

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CERCARIA SAUNDERSI, N. SP.*

By

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The study of larval trematodes found in the fresh water molluscs of India has not received much attention apparently. Sewell (1922) published his valuable work on *Cercariae indicae* wherein he has described about fifteen furcocercous cercariae and has classified them. Soparkar (1921), who restricted himself only to furcocercariae, has described only about five of such found in Bombay. All those include the Pharyngeal and Apharyngeal furcocercus cercariae. The present paper deals with an apharyngeal one.

The behaviour of this larva in a tube of water is peculiar. It adheres to the sides of the tubes quite firmly with its powerful ventral sucker, occasionally swims, tail foremost, and often in spasmodic jerks. The larvae do not go down to the bottom of the tube, but, remain resting in the vicinity of the snail from which they came. This shows that they are not powerful swimmers. They are positively phototrophic.

Each larva has two black vestigial eyes with transparent convex lenses directed upwards and outwards. The whole length of a living cercaria varies from 0.8 mm. to 1.0 mm. In a fixed larva the body measures 300 μ × 75 μ, the tail stem 400 μ × 35 μ and each furcal ramus 225 μ. The body and the tail are covered over with fine spines, more on the body than on the tail. The ventral sucker is also armed with spines. The snout or anterior organ is about 90 μ in length and the posterior portion is muscular. There is a single head gland. The mouth is terminal or slightly sub-terminal and is connected with a delicate tube which runs down the snout and is followed by a fine tube in the anterior portion of the body without apparent dilation or bifurcation. This consists a simple alimentary canal.

There appears to be six hollow spines situated terminally on the snout, three on each side and into these the three pairs of mucin glands open by means of stout ducts. Among these mucin glands, the two anterior ones which surround the ventral sucker have coarse granules and the two posterior pairs, which almost fill the posterior region of the body have fine granules in them. There are two masses of nervous system laterally between the eyes and the snout, and a few granules, in a mass, behind the ventral sucker which represent the future genital system.

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The excretory system is made up of the anterior lateral ducts, or collecting tubes, which unite to form two main tubes which open into a small rounded excretory vesicle at the hind end of the body. There are two patches of cilia in each main excretory tube behind the union of the anterior and the posterior collecting tubes. On each side of the body there are seven flame cells including the one in the tail. In each half of the body they are distributed as follows :—

In the anterior portion there is one flame cell postero-lateral to the snout, one behind the eye, and another antero-lateral to the ventral sucker. In the posterior portion there is one flame cell postero-lateral to the ventral sucker, one lateral to the "eyelet" aperture and another midway between these two. The "eyelet" aperture is the opening into the excretory canal of the tail stem. A little behind this opening are the flame cells of the tail stem.

The ventral sucker is an interesting organ. It is muscular, protrusible and has six bands of muscle which run from it and are attached dorsally and laterally to the body wall. The sucker protrudes so much that one often gets the larva on its side when examining it between a slide and coverslip.

The tail stem is longer than the body with a fairly wide canal running through its length. The furcal rami have narrow and delicate finfolds running nearly two-thirds of their length from the free end. There is a constriction at the junction of the rami with the tail stem. The canal in the furcus ramus opens to the outside at its tip in a barrel-like extremity.

The parthanitae are sporocysts which are long, lightly yellow in colour and contain plenty of dark granules. No birth pore could be observed nor the excretory system. The sporocysts showed movement resembling peristalsis.

These cercariae were obtained from *Limnea accuminata* (Lamarck) found in the Spur Tank, Egmore. About 4 per cent. of them were found infected and in four instances these were associated with *Echinostome cercariae* in the same snail.

The characters of the cercaria described can be summed up as follows:—

1. The anterior organ is muscular posteriorly.
2. Alimentary canal is more or less a capillary tube.
3. Pigmented eyes with lenses.
4. Ventral sucker powerful, with muscular bands extending to the dorsal and lateral body wall.

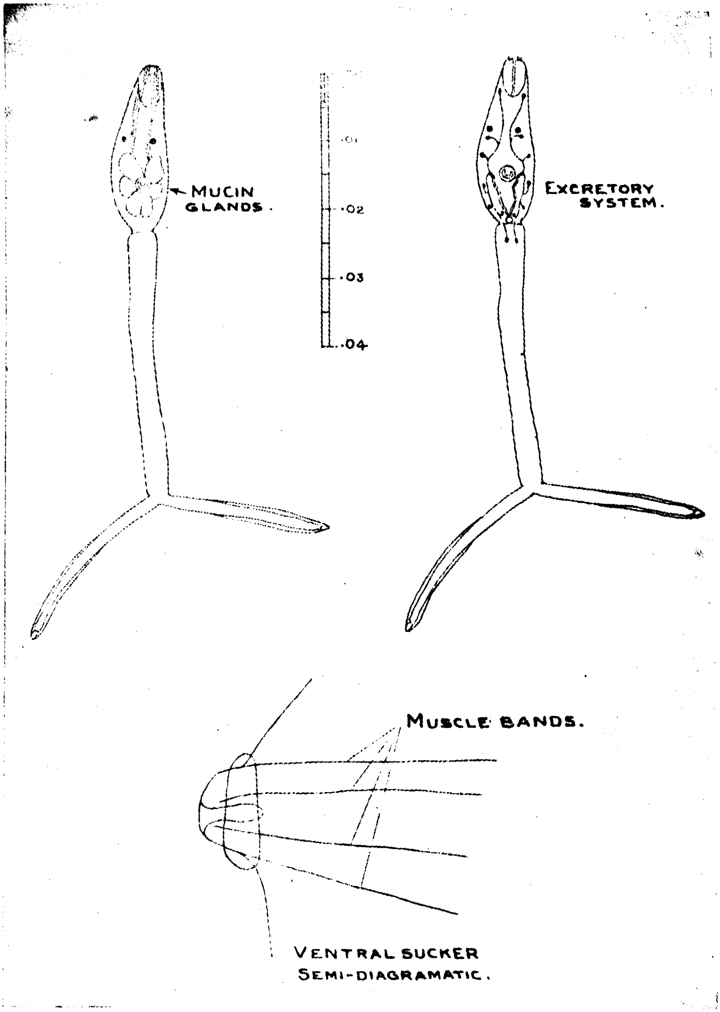

Fig. 1. *Cercaria saundersi :* showing a few anatomical details.

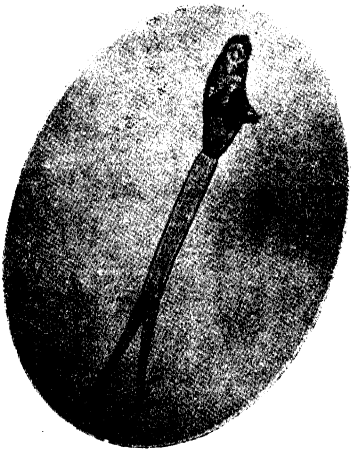

Fig. 2.
Photo micrograph of the cercaria.

5. Mucin glands large with stout ducts connected with penetrating spines on top of the anterior organ.
6. The furcal length is more than one half that of tail stem.
7. The furcae have narrow finfolds.
8. Development in long sporocysts.

The characters summed up above seem to be common to those cercariae of the "Elvae group" described by Miller (1927). Therefore this cercaria is placed in that group.

It resembles *C. macrosoma* Brown (1926) in having a spinose body and in having muscular bands between the ventral sucker and the walls of the body. The flame cell formula is similar. It differs from it in having three pairs of mucin glands and in having the opening in the tips of the furcal rami.

It resembles *C. milleri* Fast (1926) in many respects, but differs from it in the flame cell formula and in the number of mucin glands. Further *C. milleri* is aspinose.

It resembles *C. tuckerensis* Miller (1924) in having a capillary alimentary canal, but has no intestinal ceca. The number of mucin glands and flame cells is different in *C. tuckerensis*.

It is interesting to note that only one cercaria, *C. bombayensis No. 19*, Soparkar (1921), found in India has been included in that group. The cercaria in question differs from this in the flame cell formula, and in possessing finfolds on the furcal rami.

The cercaria described seems to be a new species, and it is proposed to name it "*cercaria saundersi*".

Attempts were made to infect a white rat, a fowl and a frog (*Rana tigrin*) with these cercariae with a view to obtain adults, but the same results were unsuccessful.

SUMMARY.

1. *Cercaria saundersi*, n. sp., is an apharyngeal longifurcate cercaria having finfolds on its furcal rami.

2. In its body there are three pairs of mucin glands round a protrusible ventral sucker supported by bands of muscle which run from it to the dorso-ventral walls,

3. The anterior organ is muscular posteriorly and the alimentary canal is only a capillary tube.

4. The excretory system has 6 pairs of flame cells in all. There are two patches of cilia in each main excretory tube.

5. This cercaria is placed in the "Elva group" described by Miller (1927).

6. The cercariae are obtained from *Limena acuminata* Lamarck.

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Anatomical Section.

SOME PECULIAR ANATOMICAL FINDINGS IN THE HORSE.

BY

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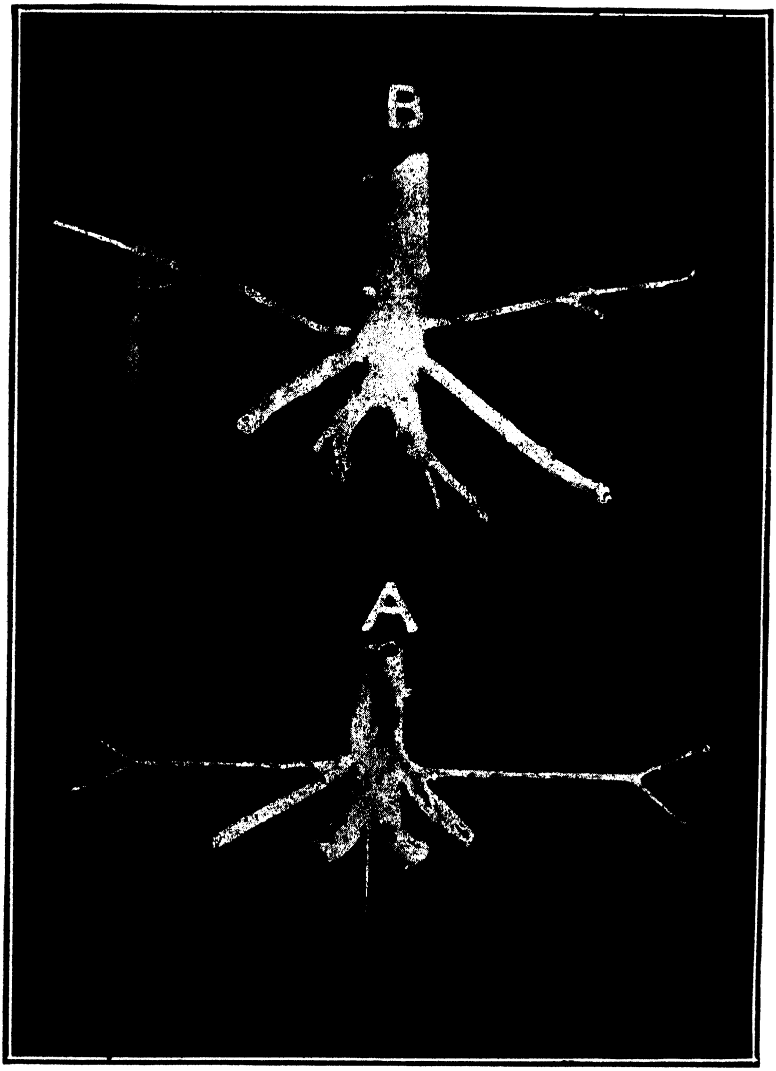
(Continued from page 198, No. 111, Vol. IX.)

11. *Variation in the origin of the circumflex iliac artery* :—The circumflex iliac artery is usually detached from the outer side of the external iliac artery close to its origin from the posterior aorta, Sisson has observed that this circumflex iliac artery may arise either from the external iliac artery close to its origin or from the aorta directly. I have in the course of my dissections in the horse, invariably found this branch coming off from the external iliac artery. But in the subjects dissected on 9-11-29 and 22-10-30, circumflex iliac of the left side instead of being a branch of the external iliac of that side was found to be coming off from the aorta itself about an inch in front of the quadrification. But the circumflex iliac of the right side originated from the external face of the external iliac of that side (Plate XI as seen in the subject on its back).

In cat and dog, the circumflex iliacs are usually seen arising from the terminal part of the aorta.

Though Sisson observes that these circumflex iliac arteries in the horse, in some cases, may arise from the aorta directly, he does not

Plate No. XI.

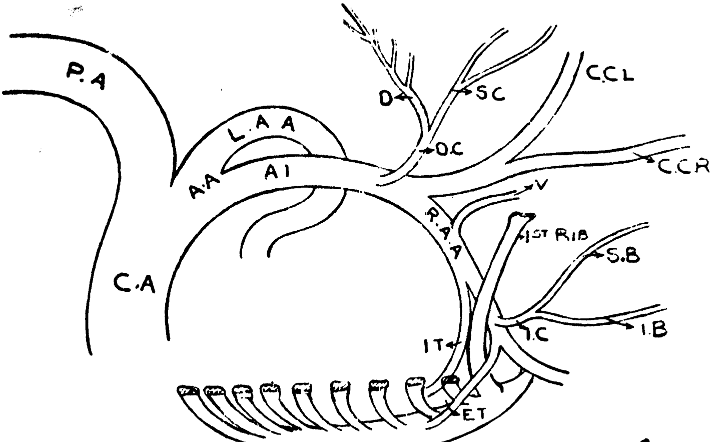


Variation in the origin of the circumflex iliac artery.

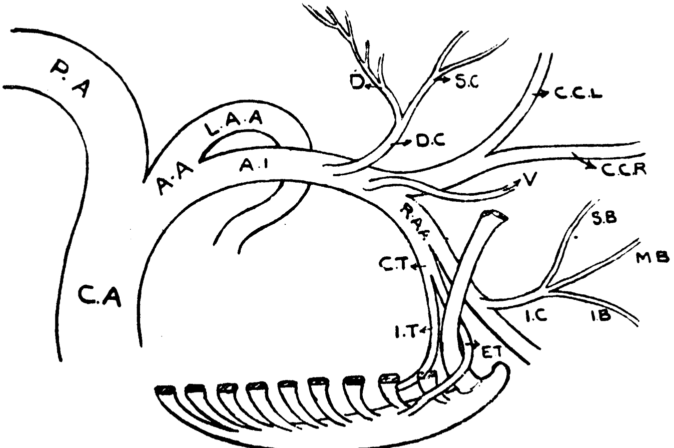
A : Normal

B : Variation in the origin of the circumflex iliac artery of one side.

Plate No. XII.



RIGHT VIEW - NORMAL — A

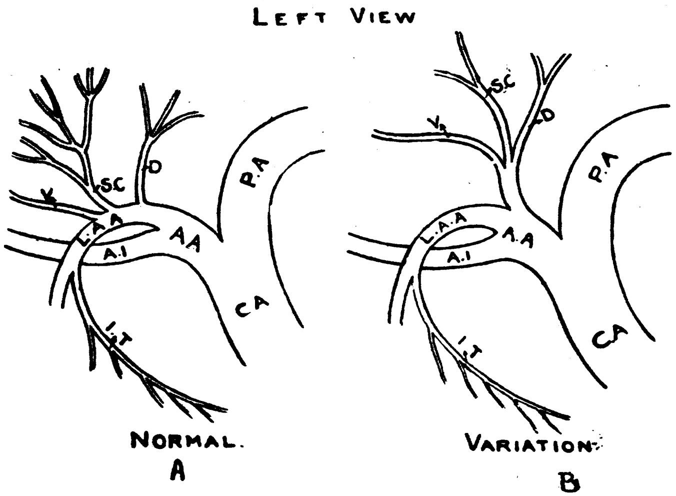


RIGHT VIEW - VARIATION — B

Variation in the origin of some of the Intro-thoracic branches of the Axillary Artery.

C. A : common aorta ; **P. A** : posterior aorta ; **A. A** ; anterior aorta : **L. A. A** : left axillary artery : **A. I** : arteria innominata ; **D. C.** dorso-cervical artery ; **D** : dorsal artery ; **S. C** : superior cervical artery ; **C. C. L** : common carotid-left ; **C. C. R** : common carotid-right ; **R. A. A** : right axillary artery ; **V**: Vertebral artery ; **I. C** : inferior cervical artery ; **S. B** : superior branch ; **I. B** : inferior branch ; **M. B** : middle branch ; **I. T** : internal thoracic ; **E. T** : external thoracic artery.

Plate No. XIII.



Intra-thoracic branches. Left Axillary Artery.

C. A : common aorta ; P. A : posterior aorta ; A. A : anterior aorta L. A. A : left axillary artery ; A. I : arteria innominata. I. T : internal thoracic artery ; V : Vertebral ; S. C : superior cervical : D : Dorsal.

add that one of them may arise from the aorta and the other from the external iliac artery in the same subject and hence this note.

12. *Variation in the origin of some of the intra-thoracic branches of the Axillary artery*:—What is usually described in books and what is generally met with in the course of dissection of the right axillary artery is that it gives off a branch—the *internal thoracic artery* from its posterior face at its inferior part and that just at its point of winding round the anterior border of the first rib, it detaches: (1) the *inferior cervical artery* (from its anterior face) and (2) the external thoracic artery (at the same level but from its posterior face). (Plate XII-A. In a bony-mare I dissected on 10-10-29, I found the following:—

(*a*) One of the intra-thoracic branches—the *vertebral* artery was found coming off from the superior face of the arteria innominata (brachio-cephalic) a little in front of the dorso-cervical artery and about half an inch behind the bifurcation of the arteria innominata. It is thus seen that the vertebral artery was a branch of the arteria innominata instead of being as usual a branch of the right axillary artery. The dorso-cervical artery itself which is usually either at or a little behind the arteria innominata was found detached from the arteria innominata further back or in other words its origin was found about an inch behind the bifurcation (Plate XII-B).

(*b*) The intra-thoracic branch of the right axillary—*the* (*right*) *internal thoracic artery*, instead of being a direct branch of the right axillary, was found as a large branch coming off a trunk which originated from the posterior face of the right axillary artery just as the parent (right axillary) vessel was winding the anterior border of the first rib. (The other branch of this trunk was found to be the external thoracic artery) (Plate XII-B).

(*c*) *The external thoracic artery* instead of appearing as a clear extra thoracic branch, was found to be coming off from the trunk from which originated the internal thoracic artery. In other words the right internal and external thoracic arteries, both originated from a common trunk which was detached from the right axillary artery. (Plate XII-B).

(*d*) *The inferior cervical artery* usually takes its origin from the anterio face of the right axillary just as this winds round the anterior border of the first rib and after a short course divides into superior and inferior branches. The superior runs up in a groove formed between mastoido-humeralis and subscapulo-hyoideus (brachio-cephalicus and omo-hyoideus) supplying these muscles and the pre-scapular lymphatic gland; while the inferior runs down in a groove formed between the mastoido-humeralis and the anterior superficial pectoral supplying these muscles. (Plate XII-A.)

But in this particular subject dissected on 10-10-29, I found a third branch (Middle branch)—(Plate XII-B) of about the same size as the other two and this third branch when traced was found entering the anterio deep pectoral about the level of the shoulder joint and terminating in it.

13. *Three of ihe intra-thoracic branches of the left axillary artery wanting*:—In a pony-mare dissected on 23-1-30, three of the intra-thoracic branches of the left axillary *viz*; vertebral, superior or deep cervical and dorsal branches were wanting. There was found a short branch springing from the upper face of the anterior aorta about half an inch behind its bifurcation. This branch divided in its turn into three distinct branches which took the place of the vertebral, superior or deep cervical and dorsal arteries. (Plate XIII-B-vessels as seen in the natural position). The internal thoracic artery of this auxillary artery in this subject was normal.

General Articles.

THE ORGANISMS OF THE GENUS PASTEURELLA AND THE CONTROL OF THE EPIZOOTICS CAUSED BY THEM.

By

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The very small ovoid rods of the genus Pasteurella, Trevisan 1887, among the gram negative nonsporulating bacteria play a paramount role in the causation of several epizootics of animals. The name Hæmorrhagic Septicæmia first suggested by Hueppe, with which the malady is familiar to us in India is not appropriate, as it represents a purely clinical and anatomical picture of the disease, that may also be seen in other diseases (Anthrax, Black-leg). It has therefore been rightly thought by Lignères to name these epizootics as Pasteurelloses after the organisms (Pasteurellas) causing them.

The definition of the genus Pasteurella, to which these organisms belong is somewhat inco-ordinate. While Bergey (1930) includes in this genus the organisms of human Plague and Tularemia along with those of the Hæmorrhagic Septicæmia (Pasteurelloses) of animals, I should prefer in accordance with Hutyra and Schutz to consider the first named separately. For the sake of convenience, however, reference will be made here to the organisms of the Plague and Tularemia together with those of the Pseudotuberculosis of Rodents, all of which in virtue of their apparent similarity to the pasteurellas may be confused with the latter.

The Genus Pasteurella has the characters of the family Bacteriaceae, Cohn 1872 (gram negative rods without sporulation) and is considered under the tribe Pasteurelleae, Piribram 1929 (no alcalinisation on ordinary peptone media*). It differs from the other genus of the Pasteurelleae (Haemophilus) by its ability to grow on ordinary media and the typical bipolar staining in natural material. The type species of this genus is Pasteurella avicida (Kitt 1883) Trevisan (1887).

Many futile attempts to divide this genus into a number of species have been made. A differentiation of species based on morphological and cultural features, serological (Chamberland and Jouan, Matsuda, Miessner and Schern, Gräfe, Cornelius) and immunological reactions (Lignières) and pathogenicity (Hueppe, Kemeny, Scennikov, Haan, Bergey) have been inpracticable, such features only serving to establish the identity of the group. Pasteurellas are therefore regarded as a collection of strains fundamentally identical, though capable of adaptation in respect of one or the other animal host. Hence the so-called zoological classification, *i.e.*, a division according to the animal origin of each individual strain is the most obvious method, and the right way of expressing this systematically is to call them "formae speciales" according to the animal species from which they are isolated. Thus:

Pasteurella avicida	forma typica	*P. avicida*
,, ,,	forma specialis bovis	*P. boviseptica*
,, ,,	f. sq. bubali	*P. bubaliseptica*
,, ,,	f. sq. suis	*P. suiseptica*
,, ,,	f. sq. cuniculi	*P. cuniculicida*

and so on.

As no bacteriological characterisation serves to distinguish one of these special types from another, the description of the type species as the only representative of the genus will be given here.

PASTEURELLA AVICIDA.

These are short oval organisms 0·4 to 1·25μ in length occurring as single cells or in pairs; take bipolar staining which is more pronounced in bacteria derived directly from the body; nonsporulating, nonmotile, gram-negative, growth at 37° C. on all ordinary media under aerobic and anaerobic conditions without alcalinisation and inability to grow on media in presence of bile salts; Gelatine is not liquified, milk remains unaltered in reaction and is not coagulated; nitrates reduced to nitrites; indol and H_2S produced; acid in glucose, saccharose, laevulose, sorbitol, galactose, mannose and with exceptions in mannitol, xylose and trehalose; no acid in lactose, dulcitol, amygdalin, raffinose, rhamnose, adonitol, dextrin, inulin, glycerol, erythritol and with exceptions in arabinose, maltose and salicin. Gas is in no case produced,

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* (This definition of the tribe Pasteurelleae is given by Haupt in his unpublished lectures).

DIFFERENTIAL DIAGNOSIS.

As already mentioned the Pasteurellas are to be differentiated from *Bact. pestis, Bact. pseudotuberculosis rodentium* and *Bact. tularense* which are more or less similar to the former.

Bact. pestis which bears a similarity to the Pasteurellas through its ability to take bipolar staining, inability to produce alkali in ordinary peptone media and its nonmotility is differentiated from the latter by its ability to ferment rhamnose and glycerol, inability either to ferment saccharose and sorbitol or to produce indol and H_2S. and by its growth in the presence of bile salts.

Bact. pseudotuberculosis rodentium produces neither indol nor H_2S, ferments rhamnose and glycerol but not saccharose and sorbitol and grows in the presence of bile salts- It is differentiated from *P. avicida* and *Bact. pestis* by its motility when cultivated under 30° C. and its production of alkali on ordinary peptone media.

Bact. tularense does not grow on ordinary media but has preference to media containing yellow of the egg.

PATHOGENICITY.

Pathogenic action of the members of the Pasteurella group is highly variable. Organisms of high virulence gaining access to the tissues of a susceptible animal can multiply with great rapidity and cause death in a few hours. The surprisingly sudden occurrence of death of cattle, especially of buffaloes, in their stalls or at work and the startling suddenness of the disease in a poultry where the birds are found dead without previously showing signs of disease, are due to pasteurella infection.

Pasteurellosis in its acute form is characterised by a generalised haemorrhagic inflammation accompanied by high fever; blood-stained exudates collect in the serous cavities and loose connective tissues, the latter giving rise to the condition of oedema which is well marked in cattle; punctiform haemorrhages under the serous and mucous membranes are a constant accompaniment. More chronic forms of the disease result in more localised reactions thus giving rise to the different forms of the disease such as pectoral, cutaneous, intestinal forms, etc. The lungs are more frequently involved.

The Pasteurella organisms may act (1) independently, as sole etiological factors of the disease causing severe epizootics such as fowl cholera of birds and Hæmorrhagic Septicæmia of cattle ; (2) conjointly *i.e.*, in partnership with some other organisms and produce the disease as in the snuffles of rabbits, which is said to be due to the joint action of *P. lepiseptica* and *Bacterium bronchisepticum* (Welser, Bull, McKee ; (3) purely as secondary invaders as in canine distemper, equine influenza and in the opinion of Möller, Schmidt, Hegyeli, Schalk, Roderick and others, also in Swine plague.

IMMUNITY.

The problem of immunity in Pasteurelloses seems to find a comparatively easy solution ; it is often observed that an outbreak of the disease can come to a spontaneous standstill without having caused a heavy toll of animal lives. Of course one also encouters instances where the loss is unusually high. It is to avoid such undesirable results that other means of combating the diseases have to be sought for.

Artificial immunisation against Pasteurelloses has been inaugurated by Pasteur through his classical experiments with fowl cholera. After Jenner's vaccination against Pox this was the first method of immunisation against bacterial diseases. Thus the two together have laid the foundation for the whole study of prophylactic inoculation. Pasteur used fowl cholera germs which had decreased in virulence at first by reason of their exposure to air and subsequently by their growth at different temperatures and through this established an immunity against fowl cholera. This method is now of historical interest as subsequent workers (Kitt. Cagny, Hess) showed that the method was not only dangerous, as at times, such inoculations caused fowl cholera, but the immunity conferred was not quite reliable as the birds died of the disease when inoculated subsequently with larger doses of virulent fowl cholera germs. Favourable results have been claimed by recent workers (Hadley, Gallagher, Manninger) who using living cultures obtained from a virulent strain of fowl cholera organisms have been able to protect mice, pigeons, and hens against considerable doses of virulent strains. Killed cultures of the fowl cholera organism have also been used and varying grades of immunity are reported. Lignières has claimed that immunity caused by *P. avicida* is also efficient against an infection by any other form of this organism. Repeated passages of these germs through rabbits are followed by an increase in virulence for this species and a corresponding decrease for the species from which the organism has been originally isolated. This fact has been made use of in the preparations of vaccines against Pasteurelloses, for which the strains of organisms which have undergone some passages through rabbits are employed.

The mechanism of immunity in pasteurelloses has not yet been fully explained. Animals immunised against pasteurelloses have been proved to contain in their blood (Pfeiffer) besides agglutinines and amboceptors other antibodies such as antiaggressins, opsonins and bacteriotrophines while the presence of bacteriocidins has not yet been proved. The antiaggressin immunity seems to play a great role; many workers agree that a high degree of immunity against the diseases can be produced by using germ free filtrates or aggressins.

Nevertheless, it should be borne in mind that as in all infectious diseases, also in Pasteurellosis the course of the disease in the individual and in the herd depends on susceptibility and resistence of the animal on one side and the infecting dose and virulence of the organisms on the other. Leaving these relationships out of consideration—it is impossible to consider them in clinical cases—the course of the disease in a herd may be said to be governed by the elimination of the germs and the site of infection.

ELIMINATION.

The organisms are eliminated in quite large numbers in almost all the secretions and excretions, particularly the faeces, urine and mucous discharges (expectorations, nasal discharges). On this account every single case of Pasteurellosis, as well as every germ carrier arising as a result of an animal surviving all attack of the disease is to be looked upon as a focus of infection disseminating large masses of highly infective germs in its surroundings.

SITE OF INFECTION.

They are chiefly the digestive tract, visible mucous membranes and the external skin. Obviously it is quite impossible to protect these organs from infection.

CONTROL OF PASTEURELLOSES.

Any control of pasteurelloses must be directed either towards reducing the chances of infection through disinfective and other measures, or towards heightening the general or specific resistence of the animals against infection. Under the conditions existing in India disinfective measures are possible only in exceptional cases. It is of interest to bear in mind, that those areas which have an access to the wild fauna from the neighbouring forests are under constant danger, as those wild animals that are susceptible to Pasteurelloses constitute a standing source of infection to the domesticated animals. For this reason, areas in the immediate neighbourhood of forests rich in wild swine, cattle and such other animals susceptible to Pasteurellosis should be considered as more unfavourable in the control of the epizootic in any particular area than those whose neighbourhood is forest-free. I do not know of any literature regarding the occurrence of this disease in wild animals in India and especially none about the occurrence of the so-called germ carriers among them. It may be, that in the struggle for existence which is keener in the wild state than under domesticated conditions, there is very little chance for the germ carriers to survive for any longer period. In the absence of definite information in this direction, a systematic investigation undertaken would be worthwhile and may serve a significant purpose in chalking out any plan for the control of Pasteurelloses in India.

HÆMORRHAGIC SEPTICÆMIA OF CATTLE IN INDIA.

The remarks made on Pasteurelloses in general apply to the Hæmorrhagic Septicæmia of cattle which in India is responsible for a great ravage among the live-stock and a distressing economic loss to the country.

Under the conditions of Indian cattle keeping, it seems impracticable to effect a cut in the epizootic through hygienic measures (isolation, disinfection, etc.). One has therefore to resort to means of raising the resistence of the animals against infection during the time of greatest danger. Attempts to raise the general resistence of the animals through good feeding, prevention from colds, and in short, such measures as would present them with increased vitality cannot find universal application. On this account stress has to be laid on measures that would provide the animals with heightened specific resistence, otherwise called artificial immunity, against infection. With this object in view the so-called passive and active immunisation methods are employed in the control of the Hæmorrhagic Septicæmia of cattle.

PASSIVE IMMUNISATION.

This is done by inoculating the animals with immune serum. The serum is obtained from cattle which have survived an attack of Hæmorrhagic Septicæmia under natural or artificial conditions. Cattle serum is preferred to those obtained from any other species of animals with a view to get a longer duration of immunity and to avoid any undesirable anaphylactic reactions.

The curative effect of such an immune serum is doubtful. I do not know of any experimental evidence where among a set of diseased animals, those inoculated with serum have survived while those left uninoculated have died of the disease. Many investigations undertaken in this direction with fowl cholera have shown beyond doubt, that fowl cholera immune serum has absolutely no curative effect on birds suffering from this disease, but the birds so treated are enabled to live for a slightly longer time, the course of the disease being in such cases prolonged. Such a result is of no value in the control of fowl cholera itself, although it is welcomed by the poultry keepers who have the economical advantage of marketing the inoculated birds before they die. If similar results were to be encountered with Hæmorrhogic Septicæmia of cattle, the use of the serum for such purposes must be strictly forbidden.

On the contrary, the application of passive immunity as a protective or prophylactic means against Hæmorrhagic Septicæmia of cattle appears to be encouraging (Holmes, Sheather, Benett). The effect of passive immunisation establishes itself immediately and lasts for about 3—4 weeks (Holmes).

Serum alone inoculations have their chief application in infected localities where it is intended to protect the still healthy animals from infection from their diseased companions. In such localities the active immunisation appears to be contra-indicated, as during the initial stages of the development of the intended active immunity the animals are in the so-called negative phase, which renders them highly susceptible to infection. For further application compare 3, under active immunisation.

In a locality where Hæmorrhagic Septicæmia has broken out among cattle, success may be achieved through passive immunisation, by repeating the serum alone inoculations at intervals of 3—4 weeks, till the epizootic completely subsides. On economical grounds such repeated inoculations cannot find an extensive application, as the cost of production of the required serum would be enormous. For this reason it is necessary to limit such inoculations:—

1. to animals such as those intended for breeding purposes, heavy milk yielders and those which are otherwise valuable.

2. to those cattle which are taken to markets, cattle shows or any such gatherings, during the prevalence of Hæmorrhagic Septicæmia. A legislature to this effect would be necessary and should enforce that every animal before leaving its area for any

gathering must be protected with serum alone inoculation and must be certified as such, by the area veterinarian conducting such inoculations. Such measures may tend to avoid any undesirable spread of the disease.

ACTIVE IMMUNISATION.

Active immunisation of cattle against Hæmorrhagic Septicæmia is accomplished through inoculating the animals with dead Hæmorrhagic Septicæmia organisms (bacterins) living but attenuated Hæmorrhagic Septicæmia organisms (vaccines) or finally with germ free extracts of oedemas or laboratory cultures (natural or artificial aggressins). The active immunity does not manifest itself immediately and is therefore not indicated in the animals which are already infected, or those that are in immediate contact with them.

It is assumed that the immunity begins to establish itself in 2—4 weeks after the inoculation, although definite proofs for this are not known. The active immunisation is, on this account, regarded as a purely prophylactic measure. The efficacy of this immunity is open to doubts. Although the results of field experiments are looked upon as being highly favourable (Sheather), contradictory results are reported under laboratory conditions (Doyle). In the absence of any uninoculated controls in such field experiments, the fact that Hæmorrhagic Septicæmia of cattle can at times come to spontaneous standstill seems to have been ignored; it is therefore possible that the results of field experiments are over-estimated. Obviously under such contradictory observations it would not be safe to take any one for granted, until exhaustive experiments with controls are undertaken in this direction.

It is beyond the scope of this article to enter into a detailed description of each of the several methods of active immunisation. The immunity produced by such methods is said to last for 6-7 months. Subject to the above uncertainty regarding its efficacy active immunisation of cattle against Hæmorrhagic Septicæmia should be undertaken :—

1. In the more remote surroundings of the locality where the epizootic has broken out, the object of such a measure is to create a belt of actively immune animals around the infected locality and thus localise the disease to the infected area. Such attempts at localisation of the disease are apt to effect a cut in the course of the epizootic.

2. In areas not in close neighbourhood of the infected localities, but where, there are seasonal outbreaks of Haemorrhagic Septicæmia among cattle, inoculative measures should he undertaken well before the beginning of such seasons.

3. In combination with serum, following the serum alone inoculation after a suitable interval of time, when undertaken in infected areas and in those of its immediate neighbourhood, it may be possible, firstly, to gradually convert a temporary passive immunity into a lasting active one, and secondly, to avoid the repetition of the expensive serum alone inoculations.

From the above arguments one is led to conclude that in an outbreak of Hæmorrhagic Septicæmia of cattle in a locality any measures of control must be directed not only to the infected area but also to those surrounding it. For this reason the animals in direct contact with the diseased and those of the immediate neighbourhood should be protected with passive immunisation, and those in the remotest surroundings with active immunisation. By establishing such belts of immune animals, it is believed that the course of the epizootic may be cut short.

With achieving such results the goal is not reached. The ultimate aim in combating the Hæmorrhagic Septicæmia of cattle is not to create such localisations of the disease, but to have in view the complete extermination of the disease from one area after another till it is extinct from the country.

An extensive investigation is, however, necessary in order to make out the best possible methods of combating the Hæmorrhagic Septicæmia of cattle in India, under the many different climatic and other conditions existing in the country. It is needless to mention that facilities for carrying on such a work are not enough. Many well equipped research centres are necessary for this purpose. Each centre must work out the problems suitable to the conditions existing around it. The day may not be far off, when decidedly better results, than at present, will crown the endeavours of systematic workers in this field.

ACKNOWLEDGMENT.

I deem it a great pleasure to express my thanks to Prof. Dr. Haupt, Leipzig, for the helpful criticisms and suggestions made during the preparation of this article.

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EXPERIMENTAL FACTS ABOUT THE USE OF ARSENIC TRIOXIDE IN THE TREATMENT OF CHRONIC CASES OF THRUSH IN HORSES.

BY

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The term thrush is applied to an affection of frog brought about by neglect of feet and careless shoeing. The ordinary course of treatment varies with the severity of the disease and is principally based on cleanliness and adequate shoeing.

I have had a number of cases of thrush, which came to me for treatment and they got well by careful hygienic and local medicinal treatment. Attention to shoeing in some cases demanded the heels to be lowered considerably, others were shod with tips and some were left unshod to ensure proper functioning of the frog and thereby its development.

I felt a great difficulty in certain advanced cases, most of them having thrush in all four with considerable amount of suppuration. In such cases a course of Arsenic was suggested to me by Brigadier H. S. Stewart, which I tried with very good results. I was also told that at the Muktesar Laboratory, it was found that Arsenic had some action in curing cases of thrush, when that drug was under trial against Surra in horses.

Arsenic Trioxide was used and was given orally mixed with a little quantity of food in the following dosage :—

1st day	16 grs.
3rd „	„ „
5th „	20 „
7th „	„ „
9th „	24 „
11th „	„ „
13th „	28 „
15th „	„ „
17th „	32 „
19th „	„ „

In carrying out this treatment one should be careful to watch for toxic symptoms and if observed the course should be stopped and continued again after a couple of weeks or more.

In certain cases one course of treatment did not show much improvement and after an interval of three weeks, I gave another course. The doses given above are for an average sized Waler.

FISTULA OF THE WITHERS AND POLL OF THE HORSE.

BY

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In treating fistula of the poll or withers of the horse, the existing conditions are suggestive of the detailed procedure but not of the treatment proper.

Should the case present openings into the fistulous sacs remove all the detached substances. If there are no openings determine if there is any detached substance—if so, make an opening at the lowest point and remove same. Otherwise do not open even though the sacs contain sero-purulent fluid.

Never inject the cavity with any fluid antiseptics or wash the outer surface with water.

If forced to make an opening into the sac let it be as small as possible to accomplish your purpose and let that one interference be the last time you disturb the inside of the fistula.

Use a firing iron made of one half inch round iron at the base the point three eighths inch thick by three quarters to one inch long. Heat it in ordinary coal or charcoal fire—(the gasolene heated thermo-cautery will probably cause extensive sloughing of the skin), puncture the muscles of the neck on both sides of the neck at a point half way between the poll and withers about 4 to 6 inches below the funicular portion of the ligamentum nuche. This puts the punctures in the scaleneus and other muscles of the neck. Put the iron in full depth of point making a surface like the following . . .
Make punctures one to one and a half inches apart. . . .

In two or three days remove scabs from punctures to prevent burrowing of fluids under the skin. Do not interfere with them otherwise—they will heal promptly and in a few months will be scarcely visible if at all, when, the horse is clipped. From two to three weeks the average case is well, It is necessary of course to prevent the patient from rubbing the fistula. If he will not rub and if the weather permits the pasture is the better place for him.

In cases where there was no opening in the sack and its contents were serous or sero-purulent it has frequently occurred that by metastasis the contents of the sack is carried from poll to withers and conversely. Even then it usually disappears but takes a longer time. If it does not, fire again between the first punctures.

ENDOCRINOLOGY AND REJUVENATION: MONKEY GLANDS GRAFTED ON HUMAN BODY.

By

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The value of hormone theraphy has of late been the topic of the day both in medical and veterinary professions alike. The progress of our knowledge of the endocrine glands during recent years has considerably proved their worth for therapeutic use. Therefore the importance of an adequate supply of hormones from the various endocrine organs cannot be over-estimated.

One of the most important phases of animal physiology is said to be the control exerted by the ductless glands, over the various systemic functions. The endocrine glands have been known to control certain vital functions, by virtue of the substances they secrete and these substances are carried to the organs for which they are intended. Among the important functions depending upon the glands of internal secretion are sexual development, pregnancy skeletal growth, etc.

Now-a-days endeavours are being largely made by the physicians to employ gland products from cattle, sheep or wherever possible, raw glands from monkeys to replace either loss of economy or deficient secretions in the body and to awaken, to renewed activity, dormant or impaired glandular functions.

A short while ago one of the leading medical practitioners of Calcutta, subjected a young Hindu girl of seventeen, of a respectable Indian family, to an operation in which two monkey ovaries, removed by me from a healthy virgin monkey (*macacus rhesus*), were immediately engrafted into her buttocks. Despite every possible medical aid and her being in full youth, the girl was devoid of all natural signs of womanhood. She has since been known to be progressing well. The monkey on the other hand was none the worse for the loss and was alright in about ten days after.

A reference to the above under the caption "An Interesting Operation in Calcutta" appeared in one of the leading English dailies, which said that an operation of a most interesting nature and unique character was performed on a girl who had not developed any signs of womanhood, such as menstruation, &c., though she was then seventeen years of age. This is unusual among Indian girls. Her guardian had her treated for the last four years, but without any benefit to her.

The ovaries of a healthy monkey were engrafted soon after removal into the buttocks of the girl with the idea of stimulating her ovaries unto activity through the agency of the "Internal secretions" of the engrafted ovaries.

There have been a few cases of such operations performed successfully in Germany. No such cases have yet been recorded in India.

Details of the case :—A Hindu girl, seventeen years of age, came to the attending surgeon for treatment for the following complaints.

(i) She never had menstruation though she was seventeen years old.

(ii) No development of the mammary glands.

Previous treatment already adopted :—She was given for one year Extract of Thyroid, Parathyroid & Ovarian glands, Pituitrin tablets, &c., but without any benefit.

Physical examination :—Stout, strong, dwarfish, eyebrows prominent with thick hair. Very little hair over the whole body was a notable feature.

Hereditary history revealed nothing. Heart, lungs, kidneys normal. Examination of external genetalia revealed nothing abnormal or pathological.

Treatment subsequently deliberated on was an ingrafting operation, in which the ovaries of a healthy monkey were to be ingrafted. Accordingly a young and healthy virgin monkey was purchased.

Modus Operandi :—The monkey was anasthetised and oophorectomy was performed. The ovaries were then immediately placed between two wards of cotton in sterilised normal saline solution and immediately transferred over to the Surgeon. While this oophorectomy in the monkey was going on, in the midst of an anxious crowd of medical men at the girl's residence, where surgical arrangements were made, the human patient, on another table, almost simultaneously, was prepared for her turn. The ovaries were ingrafted deep into the muscles of the buttocks of the girl.

This is one of the many instances where a Veterinarian can be of service to a member of the medical profession.

EXAMINATION OF PATHOLOGICAL URINE IN DOGS

BY

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The recognition of changes occuirrng in urine is a great help in diagnosing many disorders of the animal system. In health little qualitative variation is to be seen, but a definite change occurs in disease. Renal affections can only be diagnosed with precision by the aid of a chemical and microscopical examination of urine. Clinically, except in the dog, little is known in regard to renal diseases particularly in bovines, but examination of the urine is of vital importance as changes may be produced by disturbance of the digestive, circulatory, respiratory, or nervous system.

The kidneys are the chief organs that excrete non-volatile substances from the body and the main functions of the kidney are :—

1. Removal of certain waste products of nitrogen metabolism and in particular the excretion of urea and uric acid.

2. Removal of acid products and thus maintain the H ion concentration of the blood.

3. **Maintenance of the optimum concentration of salts in the fluids and tissues *i.e.* maintenance of osmotic pressure of the blood at a constant level.**

4. Excretion of many toxic materials artificially introduced (animal, vegetable or mineral).

For a thorough systematic examination it is necessary to get a sample from the urine passed during the previous twenty-four hours, The only correct way to collect 'twenty-four hour urine' is to begin the metabolism period immediately after passing the night urine in the morning. Note the time and then collect all the urine passed to the same hour, the following morning. The reason for this rule is that during the night much of the waste products corresponding to the food in-take of the preceding day is passed and in the early morning before any food is given, the excretion is at its lowest level. Usually it is impracticable to collect twenty-four hour urines in animals, then it is desirable to study the urine, representing shorter metabolism periods such as three, four or six hours. It is necessary to use some preservative for the urine unless the analysis can be completed within twenty-four hours. Chloroform (2 cc.) or Toluol or Xylol should be introduced into the empty bottle in which the urine is to be collected so as to exclude from the beginning any possibility of bacterial decomposition. Chloroform is a reducing agent and consequently may confuse tests carried out by reduction of reagents. Thymol crystals may be added but this also may confuse certain tests. Toluol is the best preservative. Examination of uric acid should be made the first day because uric acid may either fall out as a sediment or may decompose as the result of long standing. The creatinin determination should be made within forty-eight hours because in some urines it is gradually in part converted into creatin.

The approximate percentage of composition of urine is given below as noted in Benham's Posology.

Components	Horse	Cow	Sheep	Pig	Dog
(1) Water ...	90	91·5	86·5	97	...
(2) Organic matter urea, uric acid, hippuric acid ...	7·0	6·5	9 8	2·0	...
(3) Inorganic matter, salts of potash, soda, phosphorus etc. ...	3·0	2·0	3·7	1·0	...
Total ...	100·0	100·0	100·0	100·0	
(4) Quantity of urine voided daily, in pints ...	8-10	40-48	3/5 4/5—1	2/5 2/2	3/4 to 1 ½

URINARY ANALYSIS.

Table showing the results of examination of urine in Dogs.

Animal.	Tests carried out for.														
	Colour.	Reaction.	Sp. Gr.	Albumin.	Blood.	Sugar	Bile Salts.	Bile Pigments.	Acetone.	Indican.	Creatinin.	Urea.	Chlorides.	Glycuronic acid.	Deposits.	Date of Examination.
1. Dog	Straw coloured	acid	1018	+	—	—	—	—					+			6-10-32
2. Dog	do	acid	1016	—	—	—	—	+					+			8-10-32
3. Dog	do	acid	1016	+	—	—	—	—					+			8-10-32
4. Dog	do	acid	1020	+	—	—	—	—					+			7-11-32
5. Dog	do	acid	1019	+	—	—	—	—	—	—	+		+			9-11-32
6. Dog	do	acid	1018	—	—	—	—	—	—	+	+		+			9-11-32
7. Dog	do	acid	1011	—	—	—	—	—	—	—	+		+			11-11-32
8. Dog	do	acid	1016	+	—	—	—	—	—	—	+		+			14-11-32
9. Bitch	do	acid	1016	+	+	—	—	—	—	—	+		+			22-11-32
10. Dog	do	alkaline	1010	—	—	—	—	—	—	+	+		+			29-11-32
11. Dog	do	acid	1037	+	—	—	—	—	—	+	+	1·9%	+			25-11-32
12. Dog	do	acid	1010	+	—	—	—	—	—	+	+		+			28-11-32
13. Bitch	do	alkaline	1030	—	—	—	—	—	—	—	+	1·5%	+			30-11-32
14. Dog	do	acid	1025	+	—	—	—	—	—	—	+	1·7%	+			30-11-32
15. Dog	do	acid		+	—	—	—	—	—	—	+	1·6%	+			1-12-32
16. Dog	do	acid		+	—	—	—	—	—	—	+	1·7%	+			5-12-32
17. Dog	do	acid		+	—	—	—	—	—	—	+	1·9%	+			6-12-32
18. Dog	do	acid		+	—	—	—	+	+	—	+	2·0%	+	+		19-12-32
19. Dog	do	amphoteric		—	—	+	—	—	—	—	+	1·9%	+	+		19-12-32
20. Dog	do	acid		—	—	—	—	—	—	—	+	1·9%	+	+		19-12-32
21. Dog	do	acid		+	—	—	—	—	—	—	—		+	+	very little	31-12-32
22. Dog	do	acid	1016	—	—	—	—	—	—	—	—	1·9%	+ ·1%	+	O	6-1-33
23. Dog	do	acid	1010	+	—	—	—	—	—	—	—	1·7%	·082%	+	very little	6-1-33

The composition of urine varies according to the nature of food, age of the animal, and whether it is at work or repose, the time of day etc.

The enclosed table shows the number of samples of urine examined by me at the Royal (Dick.) Veterinary College, Edinburgh together with the results.

The tests employed in the laboratory are as follows:—

Specific Gravity is ascertained with a hydrometer.

Albumen:—Heat plus acetic acid.
Cold nitric acid.
Quantitative estimation by Esbach's method.

The appearance of albumen in the urine is of importance as an easily recognisable diagnostic sign of disordered function of the kidneys. The kidneys become permeable to colloids and albumen appears in the urine.

Blood:—Haemoglobin by the Guaiacum tests.
Blood by microscopic examination of the deposits for blood cells.

Sugar:—Fehling's test; Nylander's test; Benedict's test; Fermentation test.

Bile:—Pigments by Gmelin's test. Salts by Hay's sulphur test.

Acetone:—Lange's test. Acetone is generally present in diabetic urine.

Indican:—Chloroform test. It is present in all conditions which augment intestinal decomposition.

Creatinin:—Weyl's test.

Urea estimation:—Doremus Ureometer with alkaline hypobromite solution.

Chlorides:—Volhard's method.

Glycuronic acid:—Tollen's reaction. It is absent in urines in hepatic derangements.

Deposits:—The urine is centrifuged at 2,500 revolutions per minute. Films prepared, stained by methylene blue and examined with $\frac{1}{12}$ objective.

CONCLUSIONS.

Renal affections are very common in dogs.

Albumin is the most common abnormal protein found in dog's urine.

2 Sugar was only found in one sample of urine, and it is not possible to confirm that it is a case of real diabetes unless a number

of such cases are examined, and know clearly whether Glycosuria is of alimentary, renal, hepatic or pancreatic and endocrine origin.

The above tests are usually followed by Professor Geo. F. Boddie, B. SC., M. R. C. V. S., and his colleagues in the clinical department of the Royal (Dick.) Veterinary College, Edinburgh, for examining samples of urine as an aid to diagnosis.

My grateful thanks are due to Professor Geo. F. Boddie, B. SC., M. R. C. V. S., Professor of Medicine, Royal (Dick.) Veterinary College, Edinburgh, for the help and facilities offered to me in carrying out the above tests.

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Clinical Articles

FIBROMA OF THE BLADDER IN A DOG.

By

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Subject :—A Dachshund dog, age nine years.

History :—When first the dog came under my observation, it was suffering from double perineal hernia. He was operated on for this on 29-8-31, with only partial success. The hernia on the right side reccurred after a couple of months. This recurrence caused a very bad constipation, which was relieved by regular administration of liquid paraffin and enemas. Even then, it was a common sight to see the dog straining for nearly ten minutes at a time, only to pass a few hard pellets of fæces. As time passed on, the constipation and straining increased and the dog was slowly and steadily losing condition. It was then noticed that the dog had great difficulty in passing urine. For the first and last time, on 5-1-32, the urine was noticed to be bloody. It was at once properly dieted and treated with urinary sedatives. The dog became alright to all appearances. Examination of the bladder did not reveal any calculus. About two months after, on the 2nd March 1932, the dog was again brought to me with very urgent symptoms of complete suppression of urine for over 24 hours. Examination of the bladder revealed a highly distended organ. Slow and steady pressure soon emptied it and an examination made after this showed the presence of what appeared to be either a calculus or a growth in the bladder. An operation was decided on and was performed on 4th March 1932.

Operation :—Having induced general anaesthesia with chloroform, an incision about 3 inchas long was made parallel to the linea Alba on the side of the prepuce, and the abdomen entered. The bladder was caught and examined. No stone was found and the presence of a neoformation was definitely ascertained. The size of this growth was so great (*vide* photograph) that the abdominal incision had to be extended to about 6 inches before it could be brought out. It was then found to be attached to the base of the bladder on the outside. With fine dissection, the attachment was severed, blood vessels ligatured and the growth removed. The hæmorrhage from the bladder was arrested by scarification. The abdominal wall was then sutured—muscles and skin separately—and the animal allowed to recover from the anaesthetic.

There was a rise of temperature on the 3rd, 4th and 5th day and the general condition of the dog also was not quite satisfactory. An intravenus injection of 5 ms. of tincture iodine in 5 c.c. of water was given on the 3rd day and this was followed by daily oral doses of tincture iodine (m ii) for 3 days. This brought the temperature down and, thereafter, the recovery was uninterrupted.

The dog began to put on condition soon. and now 10 months after—it is quite healthy and well.

The growth, which weighed 1 lb. 3 oz., was kindly examined by the Principal, Madras Veterinary College, and reported to be a "Fibroma."

Discussion :—This growth must have been growing slowly for a long time, and, as its weight increased must have drawn the bladder forward, causing difficulty in urination. The strain thus induced must have been the primary cause of the perineal hernia ; and the failure of the hernial operation on one side is evidently due to the growing tumour.

My thanks are due to Mr. V. D. Ratnam, G. M. V. C., Touring Veterinary Assistant Surgeon, Ootacamund, for kindly helping me in the operation.

INFLAMMATORY GRANULOMA OF THE TONGUE OF BLACK LEOPARD, AT THE VICTORIA GARDENS, BOMBAY.*

BY

D. S. LAUD, G.B.V.C., F.R.H.S., F.Z.S.,
Superintendent, Victoria Gardens, Bombay.

Subject :—Black Leopard, (*Felis Pardus var-Niger*).

This Black Leopard has been the inmate of this Zoo since 25-7-1920 and came to the Gardens as an adult.

History :—For over a year a tumour of the size of pin head was noticed on the right side on the tip of the tongue, and later it gradually increased in size, till it was of the size of a big marble. The tumour caused no worry to the animal except that it bled during prehension. The animal remained in perfect health and its appetite was excellent.

Treatment :—It was decided to remove the tumour by excision and consequently the animal was removed from the Park-cage to the Animal Infirmary in the Gardens.

Mr. Hira, Veterinary Surgeon to the Karachi Municipality in his Notes on Operation on a Tiger in the "Karachi Zoo" (*vide* page 250, Vol, VII, No. 3 of the *Indian Veterinary Journal* of January 1931) stated that he had to anaesthetise the tiger with chloroform for operating on a digital abscess caused by overgrown nail. On the case now reported, no local nor general anaesthesia was used at the time of operation. The animal was removed in a small moveable cage and secured by means of stout cotton ropes with the assistance of 10 keepers in keeping the animal in the dorsal position. A stout iron bar was placed in the mouth of the animal to keep the jaws open. With a pair of dressing forceps having long arms, the tumour was secured and twisted till it came off. The whole operation hardly took five minutes and there was little bleeding after the operation.

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*(Paper read at the Annual General Meeting of the Bombay Veterinary Medical Association, held on 24th December, 1932.)

Subsequent treatment consisted in washing the mouth with a mouth wash of Condy's Fluid, 1 in 20, by means of a Garden Syringe. The animal was transferred the next day to the Park-cage and the mouth wash continued for a week. The Leopard is perfectly alright now and is feeding well.

The tumour was sent to Dr. V. R. Kanolkar, M. D., (Lond.) B.Sc. (Lond.), Professor of Pathology at the Goverdhandas Sunderdas Medical College, Bombay, who very kindly examined it for me. He said that the tumour appeared to be an inflammatory granuloma with surface necrosis and ulceration.

FÆCAL IMPACTION OF THE INTESTINES IN A SIAMESE CAT.

BY

M. V. PILLAI, G.B.V.C., PENANG, F.M.S.

A half-bred Siamese cat was brought to me for treatment by a European lady on the 2nd August last year, with the history that the animal had been off its feed and was badly constipated for over ten days. The cat was found to be very dull, and unwilling to move. The temperature was found to be normal. At first sight, the cat did not seem to be in pain or in any way uncomfortable, in spite of the continuous fast. On manipulation of the abdomen, a hard mass was felt which made one suspect for impaction. Examination per rectum also showed distinct signs of the same. Ordinary treatment consisting of a laxative medicine did not bring about the desired effect. Attempts to soften the mass with glycerine enema and constant massage also failed.

I advised the owner to have it operated upon, the owner on the other hand wanted to have the animal painlessly destroyed. Accordingly the cat was destroyed and the post-mortem examination revealed a hard mass of faecal matter which looked petrified, more or less, and it weighed 10 oz. The portion of the gut that was in contact with this was beginning to be gangrenous.

'EGG-BOUND' IN A CAGED ZANZIBAR GREY PARROT.*

BY

K. R. S. AIYAR, G. B. V. C.,

Laboratory Assistant and Lecturer, Bombay Veterinary College.

A friend of mine Mr. D. one morning called on me and sought my advice and treatment for his sick parrot.

The history of sickness was that the parrot, a caged bird for over 25 years, suddenly went off its feed. I advised him to give 2 or 3 'cut-end-quill-fulls' of castor oil and report the result after 24 hours.

Next day I was informed that the parrot was passing blood in its droppings and looked worse and at my request the parrot was brought to me and on examination I found that it was straining frequently. An explorative examination of the cloaca revealed the presence of an abnormal egg impacted in the cloaca. In my attempt to dislodge the egg I broke its shell, resulting in emptying the contents of the egg and the shell pieces were then carefully removed with little injury to the mucous membrane of the cloaca. The parrot was given a wash with potassium permanganate 1 in 1000 for two days and it made an uneventful recovery.

This is the first time I saw an unfertilised egg in a caged female parrot.

A CASE OF ENTEROLITHS IN HORSE.

BY

W. V. SOMAN, G. B. V. C., (BOM).

Chief Veterinary Surgeon, Baroda.

A team of six Irish horses belonging to Shrimant Yuvraj Pratapsinha Raja of Baroda, landed in India at the end of November 1932. After giving complete rest for about a week, they were gradually put to work in harness. On December 8th, one of the horses was reported to have suddenly developed symptoms of colic. Before any aid could be obtained he dropped down and died within a few minutes.

He was about eight years of age and looked quite strong and healthy. On the morning of the 8th, he was used in harness for about two miles. In the evening at about 4 P. M. he was led in hand a short distance when suddenly he stopped, showed colic, sat on his haunches, fell on the ground and with little struggling was found dead within a few minutes.

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* (Paper read at the Annual General Meeting of the Bombay Veterinary Medical Association, held on 24th December, 1932.)

Post-mortem examination revealed a ruptured diaphragm which perhaps was the immediate cause of death. There were three calculli weighing about 111 lbs. found lodged in the colon and all of them were together in the pelvic flexture.

No signs indicative of their presence were ever noticed since the arrival of the horse and he kept up fairly good health.

All the calculii varied in shape and the 1st on the left which was the largest weighed well over 41 lbs. The third one which was prismatic, was found lodged in the flexture. One interesting thing noticed was the shape of the facets and they looked as if they were in apposition with each other.

The calculi appeared greyish in colour with fine hairy surfaces probably from oats and when cut in section, showed cocentric structure from the centre to the circumference. No foreign body was found in one of the stones which was cut for analysis, and it was found to contain 97·77 per cent. Magnesium Ammonium Phosphates with 20·22 per cent. of other organic matter. ($Mg. NH_4 PO_4. 6H_2O$).

My thanks are due to the Industrial Chemist to the Government of Baroda for the analysis.

AN UNUSUAL CASE OF RABIES IN A DOG.

By

G. A. Ajwani, M. Sc., D. V. M., D. V. H.,
Offg. Lecturer in Pathology & Bacteriology,
Madras Veterinary College.

AND

R. Venkataraman, G. M. V. C.,
Assistant Lecturer, M. V. C.

Subject.—A bull terrier dog. O. P. No. 2140,

History:—The case was admitted on 18-2-31, in the Madras Veterinary College Hospital with the complaint that it had been vomiting for two days. The vomition stopped and was succeeded by unsteady gait with retention of urine which was subsequently removed by passing a catheter. It was off its feed completely, moaning and restless; the tongue was partially paralysed. There was a swelling of the head and neck which disappeared after putting on an antiphlogistine poultice. The dog died on 19-2-31 at 3 a. m. and was postmortemed the same day.

Post-mortem findings:—The carcase was fair in condition. On opening the abdominal cavity, the spleen was found considerably enlarged nearly three times its normal size. The liver was enlarged, congested and friable. The stomach was empty and the intestines presented punctiform hæmorrhages in places with catarrhal condition of the mucous membrane of the jejunum. The bladder was distended with eight ounces of straw coloured urine and the mucous membrane presented nothing unusual. Both the kidneys presented nothing unusual. The diaphragmatic lobe of the right lung was congested, the cardiac and apical lobes being partly emphysematous and paler than normal. The cardiac and diaphragmatic lobes of the left lung were slightly congested. Pieces from the several lobes floated in water. The blood vessels over the epicardium were congested; all the chambers of the heart contained clotted blood and right side of the heart was distended. Smears from the heart, liver and spleen revealed nothing unusual.

On opening the skull, inflammation of the cerebral meninges was observed. Since this lesion together with hyperemia of the liver and spleen and empty stomach and catarrhal condition of the jejunum led to the suspicion that it might be a case of rabies, examination of the brain was resorted to, when Negri bodies were found in the impression preparation of the hippocampus major. This was subsequently confirmed by microscopical examination of the sections at this laboratory. Simultaneously with this a portion of the brain was sent to the Director, Pasteur Institute, Coonoor, who also confirmed the same for rabies. The cause of death was recorded as rabies.

A CASE OF IMPACTION IN A PONY WITH SILK WORM COCOONS

BY

S. K. SUNDARAM, G. M. V. C.,

Veterinary Inspector, Sira, Mysore.

Introductory :—In silk worm rearing areas, it is a common occurrence to see animals ailing with impaction of the gut, ending fatally in almost all the cases. Dogs very often ingest the cocoons with no different fate. Cattle and horses are fed on mulberry fodder, in small quantities as it has a good laxative action. The animals get quite accustomed to the flavour of the mulberry fodder. Occasionally one observes animals gulp a mouthful or two of the cocoons from the plate, where they usually throw mulberry leaves to feed the worms.

Subject :—An aged pony.

History :—The animal was observed on 28—3—1931, standing loose near a plate of cocoon. The owner observing the disturbed plate, surmised that the pony might have eaten some cocoons. On 29—3—31, the pony exhibited symptoms of colic. He was fed that day with more lucern, as he would not take his usual grass feed. He passed loose faeces which contained about 8 ounces of cocoon, and looked apparently in good health. The same night, the pony got loose again and secured a chance to gulp more cocoons, which was observed early next morning.

On the morning of 30—3—31, the animal had slight colicky symptoms, which became prominent during the latter part of the day. No quackery treatment was spared in any way, before I was requisitioned to treat the animal on 31—3—31.

Symptoms :—At the time of visit, the animal was lying down, with high flatulence. He was restless and was not straining much to pass faeces.

Diagnosis :—Impaction of the gut with silk worm cocoons.

Prognosis :—A guarded prognosis was given.

Treatment :—A copious warm soap water enema was given and a mixture containing, Ol. Lini. xiiʒ Ammon Carb iʒ, Ol. Turpentine iʒ, Tr. Nuxvomica iʒ, was given at 9 a.m. An hour later occasional passing of faeces was observed which encouraged me much.

10-30 a.m. ii grains of Eserine Sulphate in 3 c.c. of distilled water was injected hypodermically. At 11 a.m., the animal began to strain most violently and passed a handful of loose dung. The flatulence did not subside, and for want of facility to do Paracentesis operation, I had to resort to only medicinal treatment.

2 p.m. Condition was same except the animal getting exhausted ; a mixture containing, Ammon Carb, Ol. Turpentine, Tr. Nuxvomica aa iʒ Treacle one pint was administered.

5 p.m. No improvement had been effected by the above treatment. Considering the condition of the patient I was prompted to adopt a drastic method instead of wait and see.

A second dose of Eserine 1½ gr. Strychnine Hydro. Chlor. 1 gr. in 3 c.c. of distilled water was given hypodermically. But the condition remained unaffected except for violent straining.

9 p.m. The animal passed the cocoons in three lots, the total quantity weighing about 6 pounds, which relieved the animal of its suffering and the owner of his anxieties.

Remarks :—In cases of impaction, experienee prompts me to rely more on Physostigmine sulphus, than the usual oral dose of medicines. The energetic contraction of the muscles of the gut, perhaps displaces the impacting material specially when the offender is of soft consistency.

Notices of Drugs.

SULFARSENOL IN THE TREATMENT OF NERVOUS COMPLICATIONS OF DISTEMPER IN YOUNG DOGS.

Extract of article by Pierre Vanpoperinghe, Veterinary Surgeon.

SULFARSENOL.

Posology :—It is difficult to state exactly the doses of Sulfarsenol to use. As for all Arsenicals, the reactions of the medicament are not in direct bearing with the doses injected, the stature and weight of the patients. There is a kind of individual sensibility and special idiosyncracy in each subject. That is why it is necessary at first to use relatively weak doses to test the organism of the patient, The average doses for the 1st injection are :-

1st injection	dose injected	6 ctgr.
2nd ,,	48 hours after	12 ,, 18 ,,
3rd ,,	on the 4th day	24 ,,
4th ,,	,, ,, 6th ,,	30 ,,
5th ,,	,, ,, 8th ,,	30 ,,
6th ,,	,, ,, 10th ,,	30 ,,
7th ,,	,, ,, 12th ,,	24 ,,
8th ,,	,, ,, 14th ,,	24 ,,
9th ,,	,, ,, 16th ,,	24 ,,
10th ,,	,, ,, 20th ,,	24 ,,

If by chance any disturbance is noticed, it is an indication to lessen the doses and then gradually increase them again or the doses may be divided and the number of injections increased accordingly. For animals which tolerate the treatment well, our aim is to reach as soon as possible a relatively high dose—for example 30 ctgr. for a dog of 8 kilos in order to quickly obtain in the organism a strong concentration of Sulfarsenol. The excellent results of the product are generally felt after the 6th injection, that is to say towards the 8th or 10th day of treatment. To avoid relapses which are always tedious, treatment should not be stopped, but should be continued at least up to the 10th injection that is up to about 20 days treatment.

Sulfarsenol used in all the stages of Distemper gives very good results. If used as soon as the first symptoms show, Sulfarsenol checks the progress of the affection and all the complications are avoided.

For animals suffering from chorea, or paralysis of recent appearance, Sulfarsenol gives 90% cure. We have treated dogs which had been paralysed in the hind legs for about 8 days and which after the 5th or 6th injection of Sulfarsenol, recovered their power of movement. At the same time we have noticed cases of chorea localised in the hind quarters the cure of which was obtained after 2 injections. This fact is rather rare. The choreic attacks generally lessened in number towards the 4th or 5th injection, and disappeared afterwards after a time which varied according to the individuals.

SULFARSENOL IN THE TREATMENT OF SERIOUS NERVOUS LOCALISATIONS OF DISTEMPER IN DOGS.

Extracts from "La Revue Veterinaire" and Journal De Medicine Veterinaire Et De Zootechnie," Reunis.

By

CH. MONPERT

Veterinary Surgeon.

Observation :—Small Cocker bitch, 10 months old, weighing 6 kilos. This animal was brought to us on 12th February 1927—and was showing alarming clinical symptoms of nervous localizations due to Distemper.

The chief symptom was Paraplegia. The hind quarters, incapable of moving, refused to keep up the body. There was complete functional weakness. The patient, when induced by its master to move, invariably fell on its side or rolled over on its back at each attempt. While lying compulsarily stretched out, it showed moreover, rythmical jerkings in its front limbs, in the trunk, in the cervical region and in the jaws (6 to 8 per minute during our first examination). Prehension of solid food was impossible in spite of the fact that the appetite was distinctly preserved. The nose spasmodically struck the ground and the patient was unable to raise its head. In order to feed it, the owner told us that he had to keep its head above a plateful of bread and milk. Whenever the head was freed, it fell into the food, where it splashed about but the patient shaking vigorously could no longer eat.

Commemorative :—In about five weeks' time purulent conjunctivitis occurred which was quickly followed by St. Vitus dance. A colleague was called in. Treatment with the bromides was unsuccessful. No amelioration was recorded. The symptoms were choreic and on the other hand continued to increase, and paralysis set in.

We tried Strychnine Sulphate for lack of Sulfarsenol, but we proposed to the owner to try treatment with this arsenical compound, without much hope of a complete cure however, since the original nervous manifestations had been showing for more than 20 days and the intensity and seriousness of the actual clinical symptoms seemed to make the prognosis considerably worse.

The use of Strychnine Sulphate was useless. On the 17th of February 1927, we received from the laboratory of Biochemic Medicale, ampoules of Sulfarsenol and we immediately gave subcutaneously a first injection of 3 centigrammes Sulfarsenol behind the shoulder.

We repeated the injection 48 hours later; the dose being 6 centigrammes. The third injection was only 2 centigrammes as there was some delay in the complimentary Sulfarsenol which we had asked, reaching us. Afterwards the following injections were given :—

17th	February	...	3	centigrammes.
19th	,,	...	6	,,
21st	,,	...	2	,,
24th	,,	...	9	,,
26th	,,	...	12	,,
28th	,,	...	15	,,
2nd	March	...	18	,,
4th	,,	...	21	,,
7th	,,	...	24	,,
9th	,,	...	24	,,
11th	,,	...	27	,,
14th	,,	...	24	,,
16th	,,	...	24	,,
18th	,,	...	24	,,
20th	,,	...	24	,,
22nd	,,	...	24	,,
24th	,,	...	24	,,
26th	,,	...	24	,,

A very marked improvement showed after the 5th injection. To the surprise and also to the satisfaction of the owner, the patient at first tried and then succeeded in eating by itself; after a little while it got up and commenced to move although in a staggering way. Paralysis of the hind quarters disappeared.

Improvement continued and rapid progress was made. On 7th March the patient showed only a few slight cervical jerkings and also a few movements in the lower jaw—reminding one of hiccup. Its walk became normal, apart from a few infrequent stumbling steps. It then became quite bright, barked, frisked about and was quite playful. We continued the injections in doses of 24 centigrammes right up to 26th March 1927, in order to saturate and maintain the organism in "a veritable arsenical bath" and at that date cure was complete.

The medicament administered entirely by the subcutaneous route had been well tolerated, even in the biggest dose. Oedema and a little pain were noticed at certain periods during the course of the injections, but these disappeared without any trouble after 5 or 6 days.

The appetite had always been excellent and gave the organism power of resistance. We advised chopped raw meat as food. Cod liver oil although recommended could not be administered as it caused vomiting.

In treating our patient, we were prompted by the indications contained in the thesis of our colleague Dr. Babb, Veterinary Surgeon, Paris, and the observation which we have related corroborates his conclusions.

Sulfarsenol is very easily employed. It possesses a certain curative action in nervous localisations due to Distemper. The interesting points of the case which we believe worthy of pointing out are that when we commenced treatment, the onset of the nervous localisation dated back for more than 20 days, that the patient was treated unsuccessfully with Bromides and Strychnine Sulphate, that the choreic symptoms were becoming worse, that there was complete paralysis which had been definitely established for several days. In a word, the clinical outlook was serious, to such an extent that, since incurability of the affection seemed inevitable, the owner had expressed his wish that the animal should be destroyed, But, on the other hand, he was quite happy to submit his bitch for experimenting and he followed our advice willingly. We confess that when we commenced treatment, we had only a very slight hope as regards the result, considering the late employment of Sulfarsenol and the presence of serious lesions already well established. We had told the owner, moreover that in any case this was the only medicament which seemed to us capable of producing any improvement or cure of the patient.

Our conjecture was greatly surpassed since a cure was effected with 38 days treatment. To-day the patient is normal and walks about as if it had never had either paralysis or chorea.

This is the first time that we have used Sulfarsenol in the case of a dog. It shows that in the treatment of serious nervous localisations due to distemper, Sulfarsenol possesses a curative action even when it is employed in almost hopeless cases and when treatment has been commenced late, similar to the case which we have just related.

Perhaps there would not be such a beneficial action in every similar case, but we wish to point out that before pronouncing a case incurable, it is necessary to try treatment with Sulfarsenol.

Successes can then be recorded for the good of the patients, their owners and the Veterinary Surgeons.

TRYPAFLAVIN IN THE TREATMENT OF FOOT AND MOUTH DISEASE.

Mayer (Deutsche Tierarztliche Wochenschrift 1920/41.)

The author has used Trypaflavin extensively in foot and mouth disease. In the very first experiments with this drug he kept controls, a measure which was abandoned afterwards when the therapeutic efficiency of the drug was practically proved.

In toto Mayer and his co-workers treated 646 animals with Trypaflavin using ½—2% solution. The total losses amounted to 2—9% only which low figures speak for the excellent action of the drug. Cases of collapsing animals, which might otherwise have proved fatal, could be saved if Trypaflavin was given in time and repeatedly. The following case is noteworthy.

A cow, 8 years old, just having given birth to a calf, suffered from foot and mouth disease for 3 days subsequently. Patient got local treatment with Trypaflavin powder together with 1 gm, of Trypaflavin perorally. On the fourth day the author was called in, since the animal had suddenly collapsed. When the author arrived she was up again. M. gave an injection into the vena jugularis having withdrawn a third of a gallon of blood previously to ease the heart function. 1 gm. of Trypaflavin was given intravenously. The repeated collapses were stopped almost immediately and disappeared entirely on the next days. 5 weeks afterwards the cow was in a perfectly healthy condition ; milking was normal.

The author concludes his publication as follows :

If not a specific, Trypaflavin is at least a very effective agent in the treatment of malignant foot and mouth disease. Mortality is decreased to a minimum and on account of the simplicity of its application, it ranks first among the preparations used to combat this disease.

MUSTARD FOR ANIMALS.

In many minor, and some major, illnesses, it is possible to treat animals through their skins, and it is here that mustard—that old and well tried friend of man —, can play its part.

The chemical composition of Mustard need not here trouble us. It will be sufficient for the purposes of this brief article if it is stated that the physiological properties of Mustard are due mainly to its volatile oil, which is liberated by ~~rather~~ complex chemical processes when mustard flour is mixed with water.

The primary action of this oil on the skin is to cause warmth and tingling ; the flow of blood to the surface of the body is stimulated, and any congestion is thereby relieved. Moreover, this stimulation of the circulation acts reflexly on the heart and lungs, and not only is relief from the pain suffered obtained, but the Mustard induces a general tonic effect, tending to restore a healthy condition.

The circumstances under which Mustard can be used in veterinary practice are essentially similar to those arising with human beings.

In the relief of local pain the Mustard poultice or plaster is invaluable. The size of the poultice naturally depends on the size of the animal for which it is intended and also the area of the body affected. The poultice is prepared by making Mustard flour into a thin paste with lukewarm water. It is applied to the affected area and it should be left for a period of time depending on the intensity of the pain. No poultice, however, should be left on for more than 20 minutes. In addition to the pains caused by muscular stiffness etc., such pains as flatulent colic can be relieved by the application of a Mustard poultice at the site of the pain.

Other groups of infections for which the Mustard poultice is strongly recommended are inflammatory diseases and catarrhal conditions. Pneumonia and pleurisy are treated, as in the case of human beings, by a Mustard poultice, as already described. In the case of a horse a poultice made from ½ to ¾ lb. of Mustard is applied to each side of the chest and kept there for 15 to 20 minutes. In catarrah, congestion of the lungs, and throat infections, similar steps are taken.

Febrile conditions in the smaller animals can be treated by a Mustard bath prepared by adding 1-oz of Mustard flour to every gallon of water. In such cases it is necessary to keep the animal warm following the bath.

The above conditions refer to the external use of Mustard. Mustard in small amounts given with a little chalk in warm milk forms a useful astringent to be used in the case of diarrhoea in horses. As an emetic, Mustared is perhaps the safest of all. This is because of the fact that in addition to its emetic action Mustard has a stimulating action on the heart. All other emetics have a depressing action. In the case of dogs, one dessertspoonful to one tablespoonful mixed into a very thin paste with water and given by mouth produces vomiting in one to five minutes.

Mustard is a valuable aid in the eradication of worms from sheep. A very safe and efficient method is as follows. Dissolve 4 ounces of copper sulphate in 2 quarts of hot water. Mix 4 ounces of Mustard with a little cold water, add to the copper sulphate, and make up the mixture with cold water to 2½ gallons. For an adult sheep the dose of this drench is 3 to 4 fluid ounces; for lambs 2 to 6 months old from 1 to 1½ fluid ounces; 6 to 10 months—1½ to 2 fluid ounces; 10 to 12 months—2 to 2½ fluid ounces. Starve the flock for at least 18 hours before drenching. This gives the stomach time to clear before the vermifuge is placed to do its work. Do not feed or water for at least 4 hours after drenching.

During recent years carefully controlled feeding experiments have demonstrated the value of Mustard as an adjunct to the food of laying hens. The Mustard should be added to the "mash feed" at the rate of 1 teaspoonful of Mustard to 6 birds, during the cold weather months.

In preparing a Mustard poultice or bath, boiling water or water above 140° F. should not be added directly to the Mustard flour owing to the fact that the enzyme myrosin would be inactivated. Where a really hot poultice is required it is best to mix the Mustard with a little cold or lukewarm water and allow to stand for a few minutes to enable the volatile oil to be liberated. Boiling water can then be added if desired. It is not desirable to apply a Mustard poultice to broken skin. If a poultice made from Mustard flour alone is too strong, it can be made less potent by mixing it with linseed meal or with flour.

From the explanation given of the mode of action of Mustard, and from the special indications referred to it will be obvious that the usefulness of this simple remedy in veterinary practice is very great. In this short account it is impossible to go into details of every use of Mustard, but the special indications in which the Mustard poultice or bath can be used in veterinary praetice will be apparent from the general description given above.

Notes.

Glad tidings reach us of the success of Mr. P. M. Narainasamy Naidu in the final examination for the degree of Doctorate held by the Faculty of Veterinary Medicine of the University of Leipzig, Germany. His thesis for the examination was "The result of a Critical Investigation into the Biology of Staphylococcii Pathogenic to the Domestic Animals". It is published in German and rightly dedicated to Dr. L. C. Coleman, M. A., Ph. D., C. I. E., Director of Agriculture in Mysore. We most heartily congratulate Mr. Naidu.

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As a *true Scientist* he has not forgotten to secure patronage and encouragement to Veterinary Journalism in his native land. Through his kind services, this *Journal* has been introduced to the Faculty of Veterinary Medicine of the University of Leipzig. We publish elsewhere a letter from our esteemed colleague Professor Dr. Klimmer, Director of the Institute of Veterinary Hygiene of that University. We are thankful both to the worthy Professor and his pupil.

* * *

For the first time in the annals of Veterinary Services in India, an Indian has been appointed as the Director of Veterinary Services. The honour has fallen on Rai Sahib R. V. Pillai in Central Provinces. We have extracted in this issue a gazette notification announcing the appointment, though for a short period. We congratulate Mr. Pillai most heartily.

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We have extracted in this issue from "The Sunday Times" Singapore, two interesting cases of Cruelty. We wish the same stringent measures are adopted in India as well.

* * *

We invite the attention of our readers to a notable address delivered by Khan Sahib N. D. Dhakmarwala, G. B. V. C., at the annual meeting of the Bombay Veterinary Medical Association. It is not like the usual routine but deals with a few problems of great interest to the profession.

* * *

The "Hindu" Correspondent of Bangalore wrote under February 14, that "a meeting of the Bangalore District Board was held at Savandurga in the Magadi Taluk on Saturday last, under the presidency of Mr. V. Venkatappa, M. L. C., President of the Board. The Board sanctioned a sum of Rs. 10,000 towards the construction of an up-to-date well-equipped Veterinary Hospital at Bangalore, which is to be built at a cost of about Rs. 90,000. It was a reproach all these days that the Veterinary Hospital at Bangalore City did not have a decent building of its own and we had occasion to point out this defect in a previous issue of this *Journal*. That blemish on the fair name of Mysore is, we are glad to note, shortly to be removed.

* * *

We have much pleasure to invite the attention of our readers, especially of those in the presidency of Madras to the movement to put up a portrait of Mr. F. Ware, F. R. C. V. S., I. V. S., in the Madras Veterinary College. The proceedings of the meeting held in Madras on 16-4-33 with this object in view, have been published elsewhere in this issue of the *Journal*. We feel sure that the movement will receive hearty support from the profession in this Presidency.

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We had occasion to refer in the last issue of this *Journal* to the formation of the Rural Service League in Anantapur District. We are glad to know now that this newly born League has been quite active. During the celebrations of the birth day and anniversary of the coronation of Sri Krishna Devaraya of Vijayanagaram fame, the League held on 10th and 11th February 1933, in Anantapur an Agricultural, Veterinary, Public Health, Arts & Crafts Exhibition and arranged a series of lantern lectures on these subjects. The exhibition attracted a large number of visitors who took good deal of interest in the exhibits. There may have been many such conferences and exhibitions held in other places as well, but unfortunately accounts of such events do not reach us. We shall be glad to publish in the columns of this *Journal* accounts of such events for the information and stimulation of our readers to play their part in their respective areas and thus educate the ryot.

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The Annual Report of the Imperial Council of Agricultural Research for the years 1929-30 and 1930-31, is a very interesting record of the activities of the Council.

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Para-11 of the report reads as follows:—"Animal husbandry research which should, from its importance to a country like India, where animal power is still predominantly used in the practices of agriculture, claim an equal share in the Council's activities, did not do so during the period under review." The report makes an attempt to trace the reasons for this; probably convention stands in the way of stating all the reasons which are the actual causes, for the slow progress of veterinary science as a whole in this country. We shall not attempt here to go into all these details. Suffice it to say that our experts at the helm of the affairs of the Veterinary Departments in this country have not in the past put forth the facts and figures in a telling manner to convince the Provincial Governments of the necessity of expanding the activities of their departments for the benefit of the ryots in several directions. To do this was possible and easy in the past for the official agency alone without the help of the profession and the public support. Now that the democracy has been coming on, it is necessary that the entire profession and the public opinion should come forward to strengthen the hands of the heads of departments in their demand for greater financial help from the state to expand their activities. There should therefore be greater co-operation and closer relationship between the departmental heads, the members of the profession and leaders of public opinion.

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In the same para, we find " Requests for grants for schemes of research with an agricultural bias are coming to the Council in an ever increasing stream from the Universities, but that is not so on the animal husbandry side''. This does not come to us as a surprise. When our Veterinary experts in India feel shy of the Universities and do not like to have closer relationship with these learned bodies we cannot expect a different state of affairs. We have been crying hard that the Veterinary Colleges should be affiliated to the Universities and a closer relationship between them and Veterinary Science should be established. Veterinary Surgeons should seize and welcome every opportunity of associating themselves with the educated people and learned bodies, who have been at present controlling the affairs of the Universities. To day the greatest foe for the Veterinary Science is the colossal ignorance of our educated people regarding the possibilities, utility and importance of Veterinary Science in this agricultural country. When we dispel this ignorance through propaganda and other means, we shall achieve success.

* * *

Precious good time is being wasted without taking vigorous steps to induce the Indian Universities to create a Faculty of Veterinary Science. The heads of Agricultural Departments foresaw the advantages in the affiliation and closer relationship between the Agricultural Science and Universities, and now for some time past, the Agricultural Science has formed part of the University Education, with the result, we find to-day "the Universities are coming forward in an ever increasing stream with schemes of research with an Agricultural bias, but not so in the case of Veterinary research".

We are not quite convinced of the reasons such as "long periods of time" "heavy capital expenditure" and "in only certain lines of veterinary research the Universities could successfully undertake and not in others" Everybody knows that the Research workers are at their work in several Universities tackling some important problems for years together involving heavy expenditure, long periods of time, etc. Universities have been supporting these researches in the field of physical and other sciences. Only when they are convinced by our experts that similar treatment is necessary for the Veterinary Science at the hands of Universities, then only these bodies will come forward with such schemes for veterinary research. We as a profession should therefore wake up.

* * *

The leading local Anglo Indian daily "The Madras Mail" has published in its issue of the 13th April 1933, a forecast for the Tamil New Year "Srimukha" by "T. M. S", one of its Correspondents, whose reading of the planets have been published in it every Tamil New Year day for the last 40 years. The following are some of the extracts from the above forecast so far as they relate to agriculture and cattle:—"The influence of the Tamil New Year will be paramount only in the regions south of the Vindhya mountains". Soils will be fertile, cattle will prosper, fruits and vegetables will grow in profusion and farming will be profitable".

* * *

We only wish that this forecast will come to pass during the year and save the agriculturist from the prevailing depression...... "The Jupiter on whose day the Tamil New Year has dawned, has become the premier. He is a friend of the poor farmer. He will give timely rains. Cultivation of all kinds will engage his earnest attention. *Veterinary Science will advance. Local Boards will be forced to provide more veterinary facilities, on pain of grants being withheld.* Local bodies will be made more active. Ministers will be required to work in closer co-operation with the people", (Italics are ours). We like this rosy picture of the forecast. We have pleaded in these columns all these years that the Local bodies should utilise the services of Veterinary Surgeons in the several phases of their activities. We the human agency have so far failed in our attempts. We hope the heavenly agency of Jupiter will succeed.

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"Responsible executive powers have not been assigned to Saturn but he is in charge of Zoology, Botany, Exchange, Colonization and Diplomatic missions. Dogs, Cows, Horses and cattle farms will also be under his control". The great hopes evoked in the above extract are partly taken away by the prophesied control by Saturn who is not invested with responsible powers. We were under the delusion that in the heavenly hierarchy, there were no ministers in charge of portfolios, without possessing the necessary powers and without being responsible. To our regret Saturn has been placed in charge of Dogs, Cows, Horses and cattle farms without powers and responsibilities. We hope there will be a timely protest even in the heavenly assemblies against such irresponsible state of affairs, even as we find protests though without any beneficial results—in our Legislatures against similar state of affairs. The *pundits* of the constitutional laws are telling us that the Dyarchy in this country has no parallel in any country in this world. But here is a parallel in the constitution of heavenly bodies. Probably these heavenly bodies have found it easy and profitable to copy the models from Indian constitution.

* * *

Anyhow we watch with interest the events of the year, praying all the while the rosy side of the forecast may come to pass.

* * *

From the extracts of the proceedings of the Budget Session of the Madras Legislative Council on the 25th March 1933, published elsewhere in this issue, it is seen that a large number of members are continuing to take interest in Veterinary matters. This is really a hopeful sign of the times. Many of the subjects which have been engaging the attention of the A.I.V.A., and this *Journal* are touched in the discussion of the cut motion to the veterinary demand. What is now required is the continued agitation by the M.L.C's to get the several schemes proposed by them, introduced to the best advantage of the ryot. Groups of these M.L.C's will do well to get themselves well acquainted with the details of a set of veterinary problems and specialise themselves with up-to-date conditions of those problems in other civilised parts of the world, with a view to bring pressure on the authorities to introduce similar things in this country. The members of the professsion should also continue to educate the public leaders on the several veterinary needs of the country.

* * * *

We are glad to understand that the Pasteur Institute, Coonoor, has found it possible to reduce the cost of Anti Rabic Vaccine supplied for the treatment of animals, the reduced cost ranging from Rs. 6 for dogs and cats and other small animals to Rs. 31 for elephants. Regarding cattle, the reduced cost of Rs. 11 is, in our opinion, still high as the owners of these animals are generally poor. We hope time will soon come when the Anti Rabic Treatment for poor man's animals will be made available free of cost as in the case of poor man himself.

Association News.

ASSAM VETERINARY ASSOCIATION.

ADDRESS PRESENTED TO

WILLIAM HARRIS, Esq, V. D., M. R. C. V. S., I. V. S.,
Superintendent, Civil Veterinary Department, Assam.

Sir,

It is with deep feelings of sorrow and heavy heart, we the members of the Civil Veterinary Department, Assam, beg most respectfully and humbly to approach you on the eve of your retirement and departure to England. Sir, your undaunted energy and indefatigable labour for the advancement of the Veterinary Science are quite unique. The present day well organised Civil Veterinary Department of Assam is the fruit of your labour and imaginative power. You gave it a start, tenderly nursed it in its cradle and carefully steered it through the rough sea in its adolescence so that the Department of the day is of the greatest public utility in this agricultural province of India. The well equipped Veterinary Museum, the much useful Laboratory and the Veterinary Institutions of the province will live long to fill the pages of history of the Civil Veterinary Department, Assam. Nothing could be a better and a more fitting gift by you, Dear Sir, to perpetuate your memory in this province.

Sir, you were not only our office-master but had been our guide and teacher. You impressed on us the value of self control, self reliance, self respect and dignity of labour not by mere examples but also by the moral force of your strong personality. Your name will ever shine and occupy the forefront in the history of the veterinary world in India.

Now Sir, wherever you may be, our grateful hearts will always keep close to you.

May you have a safe voyage to and a cheerful stay at home to enjoy your well-earned retirement. May God grant you a happy and prosperous long life. May the Giver of all good shower on you His choicest blessings.

We beg to remain.
Sir
Yours ever sincerely,

GAUHATI.
Dated, the 16th January, 1933.

Members of the Civil Veterinary Department, Assam.

BOMBAY VETERINARY MEDICAL ASSOCIATION.

MEMORIAL TO GOVERNMENT.

King's Building,
Soparibaug Road, Parel, Bombay
January 23rd 1933.

From

KHAN SAHEB N. D. DHAKMARVALA, G. B. V. C.
President, Bombay Veterinary Medical Association,
BOMBAY

To

The Secretary to Government,
Revenue Department, BOMBAY.

Subject:—Re-organisation Committee's recommendation for the abolition of the Bomby Veterinary College:—PROTEST AGAINST.

Sir,

With reference to my letter addressed to the Secretary, Re-organisation Committee dated 20th September 1932, and his reply thereto (copies attached), I have the honour again to address Government on behalf of the Bombay Veterinary Medical Association in connection with the recommendations made by the Re-organisation Committee with regard to the Bombay Veterinary College and the Civil Veterinary Department.

2. My Committee finds that the object of the Re-organisation Committee was to find out means of curtailing the expenditure of Government and thus balance the budget. With this object in view, the Re-organisation Committee suggested that the College should be closed on the grounds that (a) there was not enough demand for highly qualified veterinary surgeons for their supply and in order to fill this institution, students were being turned out far in excess of the demand for them, (b) that the tax-payer did not get any adequate return for his money spent on higher and vocational education.

3. With regard to above, my Committee is of opinion that if Government had made better attempts to expand the Civil Veterinary Department in the interest of the Agriculturists by introducing the latest measures in suppressing contagious diseases like Rinderpest, which carries away the bulk of the cattle population thus causing a serious economic loss to the cultivators, the interest of the

agriculturists would have been better served than at present. The problem has already been tackled or is being tackled in other Provinces and they are far ahead of this province in this respect and it is on this account that there is not much demand for veterinary services in this Province as in other Provinces. The agriculturists are ignorant and incapable of voicing their grievances and their interests have thus been neglected. Indeed it was the parental duty of Government to inculcate into the minds of the ignorant cultivators the necessity of veterinary aid and education, and thus derive the adequate return of their money.

4. The Royal Commission on Agriculture recommended that there should be at least one veterinary surgeon for every 25,000 head of cattle and one officer for each district to meet the minimum requirements of the tax-payers—the present strength has been considered by them to be quite inadequate. Notwithstanding these recommendations, the Re-organisation committee recommends the abolition of the College and reduction in the number of veterinary dispensaries which is obviously a retrograde step affecting the interests of the tax payers.

5. The Re-organisation Committee have recommended the continuation of the Laboratory attached to the Bombay Veterinary College by transferring it to Poona which will cost Rs. 16,000 for its upkeep and maintenance there. They have also recommended that 7 students should be deputed to the Madras Veterinary College by awarding them scholarships at a total cost of Rs. 14,000 per annum. In para 264 of their recommendations it is mentioned that the total expenditure involved in the arrangement which the Committee propose, is Rs. 30,000 as compared with the expenditure of Rs. 61,000 at present incurred on the College, a saving of Rs. 31,000.

6. My Committee believes that a considerable amount of deficit can be made up and the College continued to run more economically if the following suggestions be considered.

(*a*) According to certain arrangements existing between the Government and the Trustee of the Bai Sakarbai Dinshaw Petit Hospital, the staff and the students of the Veterinary College render free veterinary aid to the Hospital in return for the clinical facilities afforded to students but if the College is to be closed the Hospital authorities will have to entertain a large staff of veterinary surgeons tot reat the patients in the Hospital. The Hospital authorities will in a way be prepared to contribute towards the maintenance of the College.

(*b*) The Western India Turf Club who contribute handsomely towards several charitable institutions can also be approached to contribute a handsome donation towards the maintenance of the College and since they contemplate to encourage the Indian Breeding operations there will naturally be greater demand for veterinary surgeons in the way of their activities-

(*c*) The Bombay Municipality which was once contributing Rs. 2,500 per annum may be asked to contribute some amount towards this institution since they are making large amount of income out of the wheel tax and licensing of milk cattle stables.

(*d*) The fees for students coming from other Provinces and native states should be raised.

(*e*) As the salary of the College Officers forms the main item of expenditure in the College budget, the revised scale of pay recommended by the Re-organisation Committee should be applied (vide para. 475 of their Report) and all officers should be placed on the new scales of pay.

My committee is of opinion that it is imperative on the part of Government to continue to maintain an Institution which unlike the Arts Colleges is the only institution of its kind in the Presidency and it being also one of the nation building institutions, cannot be expected to run on commercial basis. The institution is now in existence for the last 47 years and has turned out not less than 700 Graduates who have rendered valuable veterinary aid to the poor agriculturists. It cannot therefore be classed as luxury.

7. In conclusion, my Committee beg to enter their strong but respectful protest against the Re-organisation Committee's recommendations for the abolition of the College and reduction of certain number of posts in the Civil Veterinary Department, and they trust that the Government of Bombay will not accept them.

I have the honour to be,
Sir,
Your most obedient Servant.
N. D. DHAKMARVALA,
President,
Bombay Veterinary Medical Association,

TRUE COPY.

King's Building, Soparibaug Road,
Parel, Bombay 28th September 1932.

From

KHAN SAHIB N. D. DHAKMARVALA, G. B. V. C.
The President, Bombay Veterinary Medical Association.

To

E. W. PERRY ESQUIRE, I. C. S.
The Secretary, Re-organisation Committee, POONA.

Subject :—Re-organisation of Veterinary Service.

Sir,

I have the honour to state that I have been desired by the managing committee of the Bombay Veterinary Medical Association, the members of which include officers of the Civil Veterinary Departsment, College officers, private practitioners and veterinary surgeons of private bodies as Municipality, S.P.C.A., Pinjrapoles etc. etc., to bring to the notice of the Re-organisation Committee now sitting at Poona, that the re-organisation and retrenchment effected from 1—4—1932 have already adversely affected the interests and prospects of the employees of the department. Besides the closure of the number of district veterinary dispensaries has deprived the agriculturists of the benefits of veterinary aid.

Although the Association is late in bringing this matter to the notice of your committee, I may point out that any further retrenchment either in the department or the college will seriously affect the utility and development of this department to the agriculturists and Science

I hope that I may be allowed to point out for the information of your committee that in other provinces as Madras, Central Provinces, The Punjab etc., the veterinary profession has advanced considerably and been greatly encouraged.

In conclusion, the Association ferverently hopes that due consideration will be given to this representation for which the Association will feel grateful.

I have the honour to be,
Sir,
Your most obedient Servant,
(*Sd.*) N. D. DHAKMARVALA,
President,
Bombay Veterinary Medical Association.

RE-ORGANIZATION COMMITTEE, POONA.

Dated 29th September, 1932.

Dear Sir,

I write to acknowledge the receipt of your letter dated the 28th instant on the subject of the Veterinary Service and to state that your suggestions have been placed before the Re-organisation Committee.

Yours faithfully,
(*Sd.*) E. PEERY,
Secretary,
Re-organisation Committee.

To

KHAN SAHIB N. D. DHAKMARVALA,
President, Bombay Veterinary Medical Association.

REPORT OF THE ANNUAL GENERAL MEETING OF THE BOMBAY VETERINARY MEDICAL ASSOCIATION.

The Annual general meeting of the Bombay Veterinary Association was held at the Gokhale Education Society's Hall, Parel on Saturday the 24th December 1932 at 3 p.m.

The following members were present :—

Khan Sahib N. D. Dhakmarvala,
Mr. Y. N. Marathe,
,, D. S. Laud,
,, M. G. Kulkarni,
,, A. G. Khair,
,, J. G. Gokhale,
,, G. T. Shah,
,, P. B. Cardmaster,
,, V. B. Desai,
,, R. L. Jaigaonkar,
Mr. M. R. Tegare,
,, M. K. Garudacharya,
,, V. W. Nabar,
,, A. H. Khan,
,, S. J. Khambete,
,, R. G. Sathe,
,, N. S. Naik,
,, G. S. Patankar,
,, G. K. Khajgivala,
,, P. G. Date,

The annual report of the Managing Committee was submitted by the President.

The President referred to schemes for the advancement of horse and cattle breeding and milk problem of the city of Bombay. He referred also to the apathy of the members in not sending more professional papers and lack of interest, and also how the Veterinary Surgeon will be useful to the public in his professional capacity. He congratulated Mr. Y. N. Marathe, the Honorary Treasurer of the Association for his scheme of the improvement of milk cattle breed in Poona City and starting a club by name "Gopal Sangha". The report stated that there were 133 members at the beginning of the year and there were 126 members at the end of the year. Thus there was a decrease of 7. During the year under review the total income was Rs. 345-13-7 as against Rs. 451-8-10 of the last year, which added to the balance of the last year *viz.*, 1071-10-7 amounted to Rs. 1417-8-2. The expenditure was Rs. 329-12-0 as against Rs. 403-0-0 of the last year. Thus the balance is Rs. 1087-12-2 only. The President appealed again to all members to help us by asking their professional brothers to join the Association by explaining to those who have never given a thought, that it is of great advantage to spend a nominal sum of Rs. 2/- per year in support of an Association which devotes its time to working for the interest of members as a whole.

After reading his report and address the President requested the members to offer remarks.

The following interesting and instructive papers were read by the following members :--

(1) Inflammatory Granuloma of the tongue of a Black Leopard (Felis Pardus Var Niger) by Mr. D. S. Laud, G.B.V.C., F.Z.S., Superintendent, Municipal Gardens, Byculla,

(2) 'Egg-bound' in a caged *Zanzibar* grey parrot by Mr. K. R. S. Ayer, G.B.V.C.

(3) Streptococcus Subacidus infection in a Race Horse by Mr. K. R. S. Ayer, G.B.V.C.

Lively and interesting discussion took place on the papers read. Mr. P. C. Bapat, Veterinary Assistant Surgeon. Chiplun, had forwarded a sample of soap, which had the power to eradicate ticks from all animals, to be exhibited at the meeting.

The sub-Committee's report, regarding Registration of the Association was considered and the following resolution was passed :—

Resolved that Secretaries of similar other Professional Associations be consulted and also a firm of Solicitors for legal opinion with regard to the registration and its advantages.

Proposed by Mr. Y. N. Marathe.

Seconded by Mr. A. H. Khan.

Resolved that the following members should be the office-bearers for the year 1933 :—

Khan Sahib N. D. Dhakmarvala, **President.**

Mr. P. G. Date and Mr. M. G. Kulkarni, **Jt. Hon. Secretaries.**

Mr. Y. N. Marathe, **Hon. Treasurer.**

Mr. K. R. S. Ayer, Mr. J. G. Gokhale, Mr. G. K. Khajgivale, Mr. D. S. Laud, Mr. R. G. Sathe.	**Members of the Managing Committee.**

M. K. Garudacharya, and Mr. A. G. Khair, **Auditors,**

Resolved that a sum of Rs. 10. only be paid to the Gokhale Education Society as donation.

Resolved that the Principal of the Gokhale Education Society's High School, Parel, be thanked for allowing us the use of the Hall for the Conference. Resolved that the rules as amended be printed and distributed to all the members.

Resolved that a vote of thanks be passed for the retiring Managing Committee.

A vote of thanks to the President terminated the meeting.

PRESIDENTIAL ADDRESS.

BY

KHAN SAHIB N. D. DHAKMARVALA, G. B. V. C.

At the Annual General Meeting held at the Gokhale Education Society's Hall, Parel, on 24th December 1932.

GENTLEMEN,

On behalf of the members of the Managing Committee of the Bombay Veterinary Medical Association, it is my pleasant duty to submit to you for adoption the Annual Report for the year ending 31st May 1932, together with the audited statement of accounts.

In the first place, allow me to thank you sincerely for the honour you have done me by electing me again as your President.

In the second place, I accord a very hearty welcome to you all and thank you for your attendance and co-operation towards the success of this Annual function.

Gentlemen, in the same way as the whole Presidency is suffering from financial stringency owing to trade depression, it may be said that our Association is not free from its effects. Because you will notice that the membership on the roll at the close of the year has been reduced from 133 to 126. Besides this, the apathy of the members continues with regard to the regular payments of the annual subscriptions and contribution of Professional Papers and clinical notes on interesting cases is very meagre. I therefore appeal again to all members to help us by asking their professional brothers to join the Association. Those of you who appreciate the value of supporting an Association which represents your interests can certainly help us to get new members by explaining to those who have never given a thought, that it is of great advantage to spend a nominal sum of Rs. 2 per year in support of an Association which devotes its time, to working for the interest of members as a whole. Your Committee are most anxious to increase the scope of its work but this cannot be done until our membership goes on increasing and the more members we have the more we will have to do for them. Besides the financial stringency mentioned above, the decrease in membership may be also due to the new Service Associations started last year in the Presidency proper and in Sind. I am sure that these new Associations are not started in any spirit of counterblast or competition with our Association. We will be willing to co-operate with them as our working is to achieve similar aims and objects.

Gentlemen, on the subject of financial condition of our Association, you will notice from our income and expenditure statement that during the year under review our income was Rs. 345-13-7 as against Rs. 451-8-10 of last year, which added to the balance of last year *viz.* Rs. 1,071-10-7 amounted to Rs. 1,417-8-2, The expenditure was Rs. 329-12-0 as against Rs. 403 of the last year. Thus the balanee is Rs. 1,087-12-2.

During the year one meeting of the Managing Committee was held and it was resolved to forward a strong representation to the Reorganisation Committee appointed by Government requesting them not to make any further retrenchment either in the cadre of the service or the College staff and the Civil Veterinary Department as it will seriously affect the utility and development of this Department, the Agriculturist and the Science. Also it was resolved that Mr. M. F. Vakharia be communicated with for the transfer of the funds of the old Association to the present one on the conditions laid down by him and a letter accepting all the conditions and signed by the present members of the Managing Committee was forwarded to him. Also the Sub-committee appointed by the General Body at their meeting held on 26th December 1931 for submitting their report regarding the registration of the Association under the Indian Company's Act was given further time to submit the Report.

Gentlemen, we are aware that owing to a mechanical age, the equine practice has suffered much but we also know that the horse has not yet lost its usefulness. The decision of the Stewards of the Western India Turf Club to increase the stakes allotted to races for Indian bred horses is a step in the right direction towards helping horse breeding industry, which at present is not in a flourishing condition. If the other Turf Clubs can be persuaded to do the same thing, a big step forward will have been taken. With stakes worthwhile, breeders will have an inducement to import the best English and Australian stallions and mares and the quality of the Indian bred horses must improve. In this connection, I may mention that with a view to encourage horse breeding in India, the National Horse-breeding and Show Society of India is also trying its best to impress upon the public that the future of the Indian thorough bred horse will be largely in the hands of the racing clubs of India. How far the Turf Clubs realise this can be gauged from the fact that of Rs. 45 lakhs given in racing stakes in India every year, only Rs. 2 lakhs are reserved for races for Indian horses, and horses to the average total value of more than Rs. 70 lakhs annually are imported from abroad. When the National Horse Breeding Society was founded 9 years ago. only 30 Indian horses were found racing under the rules ; that number has now increased to 200, but including race horses, polo ponies, pig stickers, hacks and remounts, India is still producing far less than one quarter of her annual requirements. So far as encouragement on big scale from the Turf Clubs is concerned the problem resolves itself into a vicious circle. Breeders of Indian thorough breds cannot carry on for the mere pleasure of breeding. They must find a market for their products and a market which will make worth their while to breed Indian horses for whom there has to be a regular cycle or rotation of races in the same way as there are for English thorough breds and Arabs and that thereby owners can keep a regular racing string and go on replenishing it. To-day there is not a shadow of such a cycle for Indian horses and consequently few breeders have taken up the matter seriously. On the other hand the Turf Club Executives say that they cannot afford to set aside big stakes for Indian horses for the simple reason that there are not enough horses to compete for them, nor can the Turf Clubs believe that the provision of regular and reasonable stakes would lead to a sufficient increase in their number. The management cannot ignore the fact that it is the Arab which largely provides the sinews of war for racing in India. The future of racing in India is unlimited and the Indian thorough bred can be developed without ousting the Arab or the imported thorough bred. As a result of the Horse Breeding Commission which visited India some 30 years ago, lands worth nearly 14 crores rupees were handed over to breeders on condition that they kept one brood mare for the purpose of breeding Indian horses for the Army. To-day the return of this land is small and the scheme is producing less than a quarter of her requirements as stated above. The Horse-breeding Commission looked on the breeding of horses only to provide Remounts for the Army and not to establish a national industry. The primary aim of the National Horse Breeding and Show Society of India is to set this national industry on its feet by founding a race of Indian thorough bred and establishing India's own stallion power.

Besides this, it is gratifying to note that Government which had appointed a Committee to report on the question of cattle supply and its improvement in Sind in 1928, has lately issued a communique on it. The Committee was asked (1) to examine the question of the sufficiency of cattle in Sind with special reference to the changes in cultivation as a result of the construction of the Lloyd Barrage, (2) to consider the measures necessary to increase their number and to improve the quality, and (3) to make any other suggestions relevant to the subject. The Committee smbmitted their report to the Government last year and a Press Note embodying the principal recommendations of the Committee was issued in December 1931. The Government has now passed orders on the report which has been published in a resolution in October 1932. The Government agree with the Committee's view that it will be a value to them to obtain correct figures of agricultural live-stock by means of special establishment in one or two typical talukas and are prepared to give effect to the recommendation when funds permit. The Committee recommended that a number of small established breeders should be granted small holdings since they are likely to be crowded out as their present grazing lands are brought under cultivation. The Government consider that the object aimed at, will be better achieved if Co-operative Cattle Breeding Societies are formed in convenient centres with the assistance of the Deputy Registrar of Cooperative Societies and small holdings allowed in a compact area so that the formation of cattle breeding societies can be readily organised and their working supervised and assisted. Experiments on these lines should be made as far as staff and funds at the present time permit. The Committee propose to develop some well established breeds of Sind cattle for milch and draught purposes and suggest that the cattle farms should be established. The schemes appear to be sound but can only be taken up gradually as finances permit. The Government also accept the Committee's recommendation that Sind should obtain a more adequate share of the grants already available for the premium bull item and that efforts should be made to encourage that system, which in their opinion, is an important line of advance. They have under their consideration the revision of the premium bull rules with a view to making the system more extensive in its scope by offering contributions towards the cost price of a bull or a monthly premium and by granting facilities for loans under the Agriculturist's Loan Act to breeders who combine cattle breeding with agriculture. The Committee recommended that the Civil Veterinary Department in Sind should be expanded and that the present system of dual control by the Department and the Local Boards be abolished. The Government are, under the present financial conditions unable to accept the additional liability. In the opinion of Government, grazing on unoccupied lands in the Barrage should be free and uncontrolled, no fees being levied and no permit being required. In this connection, it is also a matter of gratification to note that in the Presidency proper, the opening ceremony of the " Gilligan Cattle Breeding Farm at the village of Pimple about 9 miles away from Jalgaon was performed in October last by the Minister of Agriculture. This cattle breeding farm which was started about 7 months ago is being conducted by the Taluka Development Agricultural Cooperative Association, Jalgaon and is the only one of its kind in the Bombay Presidency to be run by a private agency, The scheme consists of importing good Nemari bulls and cows for cattle breeding purposes in this District and to supply premium bulls to every village in the Taluka and thus save the annual drain of two lakhs of rupees which are sent out from Jalgaon Taluka alone for buying cattle. The Farm has been named after Mr. W. B. Gilligian, the former Collector of East Khandesh, who had helped greatly in starting the cattle breeding farm. The Association had imported 22 cows and 2 bulls about 7 months back from Nemad. A forest area of 200 acres is secured by the Association where all these cattle are maintained. Nemari cattle were extensively used for all agricultural work throughout Khandesh as they have been found most suitable. The aim of the Farm was to breed bulls from the imported cattle and to supply one bull to every village in the Taluka for further breeding purposes. The scheme is costly and the Association asked for a Government subsidy of Rs. 1000 a year and five bulls every year and exemption from rent fee for the lease of the forest area. The Minister said that although the Association's three requests were quite reasonable, the Government being at present faced with a considerable financial stringency, it was difficult for him to promise them anything. In this connection, I wish to offer my hearty congratulations to the Co-operative Association for their ambitious scheme and wish them every success. I may state that the process of deterioration in Live-stock which has been going on in India for several years can be stopped only by scientific breeding in combination with improvements in feeding cattle. Nothing is more badly needed than cooperation among the agricultural population to check the process. The work that is being done at the Gilligan Breeding Farm by the Jalgaon Taluka Agricultural Co-operative Association is, therefore, to be commended particularly because it is indicative of the success which Co-operative Societies, once they have been properly organised, are likely to achieve in this field. But the financial difficulties should not stand in the way of assistance as its success will undoubtedly promote the formation of similar Co-operative Societies in other districts and lead to an early improvement of Live-stock in the Presidency. The difficulty in the management of Live-stock lies not so much in raising good stock as in proper feeding. The cultivator should make sacrifice on behalf of his cattle. No doubt, calamities such as drought followed by fodder famine account for poor feeding sometimes, and the frequency of loss by disease tempts the cultivator to keep a larger stock than is actually necessary and thus increases his difficulties. It is by carrying on vigorous propaganda to improve these conditions that Co-operative Societies can be of valuable assistance. The Veterinary and Agricultural Departments can render their services more usefully by supplying them with information and supervising their propaganda. It is also gratifying to note that the efforts of the Bombay Presidency Live-Stock Department, and public Associations like the Bombay "Gowrakshak Mandali", the "Bombay Humanitarian League and Bombay Presidency Cattle Improvement Association have been now bearing perceptible results with regard to the work of cattle breeding in the Presidency because the cattle section of the Sholapur District Agricultural Exhibition opened last month by H. E. The Governor, bore eloquent testimony to the work of cattle improvement. It was noticed there that the breeders who brought their animals to the exhibition from different villages were careful about their newly bred animals which as they have begun to realise from propaganda and actual results, is a source of great advance to them. The breeders of the best cattle got handsome prizes. Thus the regular propaganda seems to have created a genuine interest among the cultivators and breeders in regular breeding and care of cattle stock. The Poona District Cattle Improvement Association started last year has also made a wonderful progress. In this connection, I am glad to state that our energetic Treasurer Mr. Y. N. Marathe is one of the inspired workers of the Association and he has now started with the help of others, a "Gopal Sangh" or cow keepers, club whose patrons and life members are entitled to get a free cow which they are required to maintain and breed on proper lines through the select bulls kept by the Association. The dry cows of Gowlis are sent to the Gopal Sangh at Poona where good breeders and milkers are saved from premature death by slaughter. They are maintained by the Sangh at their expense and bred systematically. Thus the cow is saved, bred from, and milk is utilised by the members. It may also be noted that a Bombay Presidency Poultry Association has been formed in Poona. They hold their annual Poultry Shows there. They invite all lovers of Poultry and especially those interested in seeing bigger and better eggs, to join the Association. They also assist members with advice on disease of Poultry.

Gentlemen, the fourth annual conference of the Veterinary Department of Mysore State was opened in June last. It may be mentioned that Mysore was the first amongst Indian States to form an Association of Veterinarians and its work was progressing favourably. As a result many things had been gained for the Profession. The Mysore Serum Institute had developed considerably to be in a position to supply virus and serum for Rinderpest. It had also undertaken to supply Black-quarter filtrate and Hæmorrhagic Septicæmia Serum and Vaccine and sheep pox vaccine for use in the field. The goat-virus used for the protection of cattle during an outbreak of rinderpest had proved very satisfactory and the re-tests with bovine virus of the Amrit Mahal herd inoculated with goat virus has demonstrated that active immunity could be conferred by goat virus alone. This goat virus alone method if found successful ought to be utilised in all Provinces, being more convenient and economical by saving the large expenditure now incurred on serum. We will await further developments in this direction. In this connection Major R. F. Stirling, I. V. S., Director of Veterinary Services in Central Provinces has published an interesting paper on some experiments in Rinderpest vaccination, Active immunisation of Indian Plain Cattle by inoculation with goat adopted virus alone in field conditions in the "Veterinary Journal" of May 1932.

Gentlemen, I wish to refer again to a subject in which I take a great interest viz., the problem of milk supply in towns. In the last annual report, I gave rough details of the scheme of a Model Dairy Farm and appealed to some of our patriotic Graduates to give it a fair trial to make it a success. Since then a great deal of interest has been shown and a number of proposals have been put forward for improving the milk supply of Bombay. The Bombay Municipal Corporation has had under its consideration a scheme of bringing about 10,000 lbs. of milk per day into Bombay from Gujarat by paying a subsidy of about Rs. 57,000 a year to a company. I am not in favour of this scheme. I am aware that in Gujarat thousands of lbs. of milk are available and at the same time it is cheap. But unfortunately the existing conditions are not in its favour. To get 10,000 lbs. of milk a day means that over 1000 people must handle that milk. As the production of milk in Gujarat is a home industry, each home owns from one to two buffaloes in milk, and each buffaloe yields about 10 lbs. of milk a day throughout the year. Taking that each village would supply 1000 lbs., this means 10 villages and these villages may be anything from 2 to 6 miles away from the railway. The posibilities of contamination, therefore, are great. The milk would churn in transit and milk milked in the evening at about 4 to 6 P.M., would not be distributed in Bombay until the afternoon of the following day and unless this milk be suitably treated it would not keep. The only way out of the difficulty would be the establishment of milk receiving dairies near railway stations at centres of supply. Here the milk will have to be centrifically cleaned, then homogenised to prevent rising of fat and finally pasteurized and cooled. Now all this could not be done without money and it is doubtful if larger milk consumers *i.e.*, the Indian population would use homogenized and pasteurized milk, because once the milk is homogenized, the fat will not rise and if fat does not rise in milk in India it is considered poor. I am therefore of opinion that the Farm should be located somewhere near Chimbore which is within easy reach of Bombay. Here a large plot of land should be acquired and Government should set aside for the present some acres of it for a start to be made, and should this prove successful, more could be made available. The land should have a permanent natural water supply. Municipality or some Public Body or private person can take this land and build stables and servant quarters etc., according to the scheme detailed by me in my last year's report. From Chimbore it is possible to carry into Bombay by motor vans, pure clean milk untreated which milked at 3 A. M. could be consumed by 8 A. M. the same day, while the expenses of railing it, would be no more than milk produced in Bombay. In these days of financial stringency, the Municipality instead of giving a subsidy to a company, can spend the same sum on making a start at Chimbore so that a substantial interest could be derived annually. Thus one would like to start a "Drink more milk campaign". We must take up the problem of ensuring an adequate milk diet for children to make up for the deficiency of proteids in our ordinary diet, selecting good and healthy milkers in breeding and thus prevent heavy death rate amongst children. We should also help a great deal to improve the growth of fodders and methods of preservation and distribution. If we are to meet with full success in this kind of work it will be necessary to do a good deal of propaganda among our local consumers. At present there is not only a great deal which is wrong about our milk supply but there is something very wrong with the public also because it does not realise the value of clean milk. On these grounds, therefore, I appeal again to some of our Graduates to take up the work and I am sure the enterprise will be successful.

Gentlemen, I understand that at preseat negotiations are going on in connection with a new industry for India viz. "Frozen-milk" which has for its object the transport of milk in solid slabs like blocks of ice. This new freezing process is known as "Cito-Gel" which has for its object the preservation of various liquid food stuffs such as milk, cream and juices of fruit. A demonstration plant for the purpose has been created in the Bombay factory of the Lightfoot Refrigeration company and samples of blocks of milk were submitted to the Municipal Health Officer who has reported very favourably on it and no deterioration had been caused in the qualities of the milk. The Cito-Gel process is the invention of an Etonian Bacteriologist Dr. Boris Citovich who was associated on the Engineering side by Mr. Kusik who is now in Bombay. One of its greatest advantages is that it can easily be carried out in practice and requires a very simple apparatus in addition to the usual refrigerating plant and it is claimed that the natural qualities of the original products remain unaltered, thereby greatly improving upon the process of sterilization, drying or boiling. Above all things, speed is the essence of this process, because the low temperature employed ensures so rapid a congelation of the liquid products that the congealed articles are prevented from changing their composition or their natural qualities. The product when melted i. e. milk, regains its original form and is unchanged either chemically or physically. Further the microbes breed more slowly in de-frosted milk with the result that it keeps fresh for a much longer period, which is a decided advantage to both retailers and users. The commercial exploitation of the process in India is still under review and it is likely first to be applied to the improvement of the milk supply of the City of Bombay. This can be accomplished by installing a plant at one of the milk producing centres in Gujarat and introducing blocks of frozen milk into churns of milk before the latter are entrained to Bombay. These blocks will have a cooling effect upon the milk in the churns and will ensure that the milk is in fresh condition when it arrives at its destination. Mr. G. Azrilenks of Menkwa Chambers, Outram Road, Bombay is the local representative of the patentees. If the operating costs are kept sufficiently low the process ought to prove a success. Besides this, mainly Municipalities in India are grappling at present with the difficult and important problem of milk supply. So the public will welcome the announcement made by the Imperial Council of Agricultural Research Advisory Board at its meeting held in July last that they have sanctioned an elaborate scheme costing a lakh of rupees to investigate all problems in connection with the industrial side of the dairying industry. The Bombay Government are willing to set aside about one thousand acres of land for a start somewhere near Palghar which is 60 miles from Bombay. Thus the solution of this problem will have a two-fold effect in that Bombay City will be relieved of its primitive methods of milk supply and Government will carry on their scheme of cattle improvement. It cannot be claimed that any scheme by itself will solve the problem, as the city consumes daily about 9000 maunds of milk, but the success of the Government scheme will open the way to the ultimate remedy of an evil which Bombay has tolerated too long.

Gentlemen, I hope you will excuse me for taking up so much of the space of the Annual Report on this subject and your valuable time to day but it is a subject of vital importance and therefore this matter can be taken in the form of a paper from me.

It is also pleasing to note that the Advisory Board of the Imperial Council of Agricultural Research have recommended the scheme for investigation into the most suitable and economic methods of combating different parasitic infection in ruminants in the field, concurrently with experiments to determine animal resistance to parasitic infection. One of our own graduates Mr. Naik has been appointed to carry on this work in the Bombay Presidency.

Gentlemen, *The Indian Veterinary Journal* has served a very useful purpose in keeping members and subscribers acquainted with what all Associations are doing. The *Journal* champions the cause of the profession. It also contains original articles, reports of interesting clinical cases, suggestive editorials, extracts from scientific periodicals etc., etc. We have to thank its Editor Mr. P. Srinivas Rao for the very efficient manner in which he is making the *Journal* very popular in India. I trust all members of the profession will become its subscribers and help the Editor by sending original articles, clinical cases, etc.

Gentlemen, before I close I desire to make a reference to the retirement of Mr. K. Hewlett from the Principalship of the Bombay Veterinary College after a service of nearly 22 years, and to pay a special tribute to his work. All those who have worked with him or under him are aware of his valuable services and activities in the

Department and the College owes him very much for his devoted service and his colleagues will miss his valuable advice. I trust that although he has left India, the College will retain its place in his thoughts and affections. He has been succeeded by Mr. V. R. Phadke who was a member of our Managing Committee for many years. We offer him our hearty congratulations on his appointment as the first Indian to the Principalship of a college. We trust that he will be able to do some more useful work and try to advance the interest of the Profession.

Before closing the report, I have to thank all of you again for your presence and co-operation in making this annual function a success. Some of you have come from long distances to take part in it and discuss problems of professional interest and to exchange notes and thus to equip ourselves to render efficient service to the profession. An annual gathering of this kind is not only of great educative value in that it brings before you the accumulated results of experience, and studies of the various members of the profession but it also adds to the *esprit de corps* of the service.

Gentlemen, I am glad to have this opportunity again of voicing the gratitude felt by the members of the Association to the members of the Managing Committee and particularly the Secretaries Messrs. Date and Garudachar and the Treasurer Mr. Marathe, for all they have done during the year-when we look at the various sides of the work, it is not to be wondered at that we have been able to draw upon such voluntary workers.

With these remarks, it is my pleasant duty, to move that the Managing Committee's Report and Statement of Accounts for the year ending 31st May, 1932, be adopted.

PROCEEDINGS OF THE MEETING OF MEMBERS OF THE VETERINARY PROFESSION, HELD AT 6 P. M., ON SUNDAY THE 16TH APRIL, 1933, IN MADRAS.

Present :—

Messrs.

1. A. K. Mitra,
2. M. Sunderanathan,
3. P. Srinivasa Rao,
4. M. S. Sastry,
5. M. P. Kanniah Naidu,
6. J. D. David,

Messrs.

7. G. Theophilus,
8. D. Antonisawmi,
9. A. R. Mathusuthanan,
10. L. Adinarayana Sarma,
11. S. Vancheswara Iyer,
12. L S. Parameswara Iyer,

13. T. Vinayaka Mudaliar,
14. R. Venkataraman,
15. A. Krishnaswami,
16. A. Venkoba Rao,
17. V. Janakiraman,
18. S. Vaidynatha Mudaliar,
19. T. Raghavan,
20. P. A. Parthasarathy and
21. K. Mukunda Rao.

Proposed by Mr. V. Janakiraman, seconded by Mr. T. Vinayaka Mudaliar, Mr. M. S. Sastry was unanimously elected to be the Chairman of the meeting.

The Chairman explained the object of the meeting and said " there is a strong desire among all the ranks of the profession in this presidency to put up in the Madras Veterinary College, a portrait of Mr. F. Ware, F. R. C. V. S., I. V. S., Director of the Imperial Institute of Veterinary Reasearch, Muktesar, who has rendered very valuable services to the profession in this presidency, where he presided over the destinies of the Veterinary Department for nearly two decades."

Resolution :—*That in appreciation of the valuable services rendered by Mr. F. Ware, F.R.C.V.S., I.V.S., Director of the Imperial Institute of Veterinary Research, Muktesar, to the profession during his long stay in this presidency as the head of the Veterinary Department, the members assembled here this evening request the Principal of the Madras Veterinary College to kindly convene a meeting and take necessary steps at an early date to put up a portrait of Mr. F. Ware in the College.*

Moved from the Chair and carried unanimously.

With a vote of thanks to the Chair, the meeting terminated.

M. S. SASTRY, G.B.V.C.,
Chairman.

College News

MADRAS VETERINARY COLLEGE.

List of candidates who graduated this year, arranged in the order of merit in March, 1933.

1. Hanumantha Rao M.
2. Govinda Rao K.
3. Srinivasan V.
4. Jambulingam A. M.
5. Venkatakrishna Rao M.
6. Srinivasarangan R.
7. Abdul Kareem Khan.
8. John A.
9. Venkataramiah S. G.
10. Herbert G.
11. Abdul Haffies D,
12. Venkatanarasu G.
13. Appalacharlu V. V.
14. Prabhakaran T. N.
15. Gopalan S.
16. Dasaratha Ramiah V.
17. Appiah M.
18. Satti Rami Reddy.
19. Subba Rao N. V.
20. Thandavarayan M.
21. Balagurunathan G. B.
22. Ramaswami L. P.

MADRAS,
31-3-33.

T. J. HURLEY, M.R.C.V.S., D.V.S.M., I.V.S..
Principal, Madras Veterinary College.

BENGAL VETERINARY COLLEGE.

The undermentioned candidates have passed in the order of merit in the Diploma Examination of the Bengal Veterinary College for the session 1932-33.

1. Y. H. Surrah
2. S. M. Khayat
3. H. R. Malhotra
4. M. Y. Muallem
5. K. L. Ganguly
6. W. R. Bashoo
7. T. K. Panikkar
8. S. R. Nandy
9. H. S. Ramaswami
10. K. S. Rathore
11. C. E. Lewis

12 Md. S. A. Khan

13. N. N. Sharma
14. K. V. N. Rao
15. H. L. Thomas
16. M. L. Chowdhury
17. B. R. Paul
18. B. Chowdhury
19. T. R. Pellay
20. B. N. Chatterjee
21. P. N. Roy Chowdhury
22. M. L. Verma

BELGACHIA,
The 27th March, 1933.

A. D. MacGregor, I. V. S,,
Principal, Bengal Veterinary College.

BENGAL VETERINARY COLLEGE

Annual Diploma and Prize Distribution Ceremony

REPORTED BY MR. G. S. BANERJEE, G.B.V.C.,
House Surgeon Dog-Ward, Bengal Veterinary College, Calcutta.

The annual function of distributing diplomas and prizes was held on 27th March 1933, under the presidency of Mr. A. R. Mellis, Member of the Advisory Committee, who delivered an interesting and inspiring address, extract from which we give below :—

"I feel sure you will all agree that the Report of Progress of work done during the past session to which we have all just listened, is most gratifying and commendable not only to the students themselves, their Principal and staff, but to all of us who are keen on animal welfare, and also, most important of all, to the people of this Province.

It must be patent to all in these days that the economic value of Veterinary Education to an agricultural province like Bengal is stupendous, and it would appear that where animal welfare and animal husbandry are the foundation stones of all agricultural progress in a country the dissemination of at least the rudiments of veterinary knowledge to all and sundry seems essential. That a more advanced training, such as is done here, of greater and greater numbers of workers with leanings in this direction, is one of the outstanding policies of this Government, is most encouraging. For in such an immense agricultural area as Bengal, with millions of working and milch cattle (24, 724, 234) and innumerable disease problems to solve, (Rinderpest, Hæmorrhagic Septicæmia, Foot and Mouth Disease, Parasites, etc.) one cannot but feel at times that the enormity of the problem facing the veterinary profession and this College in particular, is almost beyond solution. It is however, only by hard and continuous labour that most of the difficulties of life are overcome and as has just been so ably explained to us in the Report of this College, by dint of sustained effort on the part of its Principal and Staff success has this year again been met with in the high percentage of passes. One might feel assured that in addition to the sum of technical knowledge now possessed by those of you students who have so creditably acquired the diploma, you will also retain and amplify your love of animals and of your fellow men, and that you will not imagine you have learned all there is to learn of this vast science :—one would sincerely hope you will, all of you, continue your studies both practically and theoretically, and reap in the future further success in that filed of science, which you are now entering in real earnest. And since I have referred to the benefits accruing to a Province from the education of those who live in it, I cannot too strongly urge the youths of this Province to turn their thoughts, studies and energies towards subjects of a veterinary or agricultural nature, such as poultry farming and fruit growing, thus escape the evils and pitfalls which follow upon idleness and lack of occupation.

As far as I can gather as a Member of the Advisory Committee of this College, the strength of Veterinary Surgeons in the districts and sub-divisions of Bengal, is far below requirements and they, therefore, cannot compete with the ravages of cattle disease, etc., as thoroughly as ought to be done; on an average, one veterinary sur geon has to attend to one and a half lacs of cattle over an area of 700 squire miles. It is to be hoped that the District, Local and Union Boards will in time, in co-operation with the Government, increase these numbers, so that there may be in each thana at least one Veterinary Assistant Surgeon with a modest dispensary. This, I am given to understand, would be nearly ideal.

In this connection, the Veterinary Assistant Surgeons of this province are under a deep debt of gratitude to the Principal whose propaganda in various ways has resulted in large number of them in obtaining employments.

Other directions in which too your Principal's activities have gone far towards solving the problems of this province, are the extension lectures on poultry farming, dairying and fodder crop growing, which have recently been included in the College Curriculum.

Further extensions in each section of the College seem called for, particularly in the form of additional lectures in the Pathological Laboratory, but all such changes will appear, I understand, in the revised curriculm, which is now in the making.

The proposed post-graduate course should also prove a great help towards improving standards all round and will, I hope, materialise before long.

But, ladies and gentlemen, there can be very few of us here to-day who are unable to appreciate the difficulties under which most Government and Commercial bodies are labouring from shortage of funds. It therefore stands to the greater credit of all concerned here, that they have been able to carry on to such a successful issue and in so many directions the work of this College under straitened financial circumstances, for, as the Principal has just hinted, econmy has been the watchword of the year.

In the general administration of this College plus the extra routine activities, many economies have been effected and sources of Revenue provided during the year. I should like also to draw special attention to the facility of this College Riding School recently extended to the public. The fees are very moderate indeed and in urging all and sundry to take advantage of this opportunity to learn to ride, I can with confidence assure them that they will be contributing to the welfare of a most deserving public institution with much gain in health and pleasure to themselves.

That the inefficiency in the training, teaching and general organisation has not followed in the faltering footsteps of finance is most satisfying, and it is obvious that the Government appreciates fully the necessity and economic value of giving to the youths of this province training and experience in subjects such as are taught here."

After a vote of thanks to the Chair proposed by Rai Bahadur A. C. Banerjee M.A., C.I.E., the function terminated late in the night. Rai Bahadur also delivered a nice neat little speech in which paying a great tribute to the Principal he said" Bengal is very lucky that they could get the service of Mr. MacGregor, a high souled, noble minded and a generous renowned man as a Principal of the College who has done much for the emancipation of the Veterinary Education in Bengal and thereby solving the question of unemployment. It is due to his indefatigable energy and a wonderful organising capacity this College boasts to be one of the best Veterinary Institutions of cosmopolitan nature in Asia".

BOMBAY VETERINARY COLLEGE.

The following candidates have been declared successful at the Professional Examination held in April 1933, in order of merit, in the final year.

1. Singh S. S.
2. Iyengar K. N. G.
3. Abhyankar R. K.
4. Kulkarni H. V.
5. Noor Ahmad
6. Ghose S. C.
7. Choubey S. L.
8. Murthy K. S.
9. Wallabhdass P. R.
10. Swamy B. N.
11. Pillay M. K. P.
12. Verma J. P.
13. Nemade G. G.
14. Bhonsle M. G.
15. Iyengar S. N. V.
16. Sarnobat R. D.
17. Dube R.
18. Navangul V. N.
19. Pathak P. R.
20. Deshpande B. C.
21. Rayalkar G. K.
22. Sayeed M. A.
23. Marathe K. D.
24. Lawrence E. G.
25. Bhonsale S. S.
26. Abbasi A. M.
27. Kulkarni N. G.
28. Deshmukh K. V.

Parel.
21—4—1933.

V. R. PHADKE,
Principal, Bombay Veterinary College.

BIHAR AND ORISSA VETERINARY COLLEGE, PATNA.

NOTICE.

The next session of the Bihar and Orissa Veterinary College will commence from the 1st July, 1933.

1. Candidates desiring admission should each submit his application on the prescribed form, together with the following certificates in original, so as to reach the Principal on or before the 1st June, 1933.

(*a*) Age and moral character certificate from the Headmaster of the school at which he last read.

(*b*) University certificate or a certificate from the School or University authorities to show that he has passed the Matriculation Examination.

(*c*) Medical certificate of fitness from an Assistant Surgeon.

(*d*) Letter from his guardian stating that all expenses incurred by his ward during the latter's period of study at the college will be paid.

(*e*) Letter of identification from some well known person stating that the candidate is known to him and the statements made in the application form are correct.

2. Government or District Board stipendiaries should in addition to the above each produce a letter from the Director of Veterinary Services, Bihar and Orissa or from the Chairman, District Board concerned, to whom they should apply in the first instance, stating that their selection as stipendiaries has been approved.

3. Preference will be given to candidates who have passed the I. A. or I. Sc. Examination of a recognised University. A good knowledge of English is essential.

4. Non-stipendiary candidates will have to appear before the Governing Body of the College when called for interview.

5. Fees must be paid according to the scale under rule 8 of the college rules, in advance, the initial payment due at the time of admission being Rs. 35-8-0 only.

6. Candidates will reside in the college hostel from the date of their admission unless specially exempted.

7. The scale of pay of the Bihar and Orissa Veterinary Service is as follows:—

Provincial ... ... Rs. 250-20-750

Subordinate—(*a*) Veterinary Inspectors.

1st grade.	Rs. 200
2nd grade.	Rs. 160
3rd grade.	Rs. 130

(*b*) Veterinary Assistant Surgeons
Rs. 50 to 125.

(fixed travelling allowance. Free house or house allowance in lieu thereof.)

8. Admission forms may be had free on application to the Principal. Prospectus will be supplied on receipt of 4 as. for each copy required,

PATNA,
25—2—33.

R. T. DAVIS, I.V.S.,
Principal,
B. & O. Veterinary College.

BIHAR AND ORISSA VETERINARY COLLEGE, PATNA.

NOTICE.

A post-graduate class will be held at the Bihar and Orissa Veterinary College as last year from first July, 1933, for the advanced training of Veterinary graduates in (1) Pathology and Bacteriology including Parasitology and postmortem technique, (2) Histology, (3) Veterinary Hygiene, Dietetics and Genetics, (4) Meat and Milk Inspection (5) Veterinary Medicine including parasitic, contagious and inanition diseases. The course will be for six months only for which a sum of Rs. 60 will be charged as tuition fee and Rs. 10 as admission fee. Seat rent for the hostel will be at the rate of Rs. 5 per month.

Private candidates desiring admission sould apply to the Principal, Bihar and Orissa Veterinary College on or before the 15th June, 1933 with the original diploma and a certificate of character.

Further particulars, if required, may be obtained on application from the Principal.

PATNA,
5th April, 1933.

R. T. DAVIS, I. V. S.,
Principal,
B. & O. Veterinary College.

Communication.

To
P. SRINIVASA RAO, G. M. V. C.,
Editor, "*The Indian Veterinary Journal,*"
Madras.

Dear Sir,

I am in receipt of your *Indian Veterinary Journal* (Vol. IX. No. 3), which through the kind mediation of our colleague Naidu, you had the kindness to send to the Faculty of Veterinary Medicine of the University Leipzig, and which was eventually handed to our Institute of Veterinary Hygiene from the Faculty. I thank you very much for this valuable addition to our Library.

With best respects.

Veterinar-Hygienisches
Institut,
LEIPZIG,
February, 8th 1933.

I am very sincerely,
KLIMMER.

Extracts.

CRUELTY TO 40 SHEEP.*

"Terrible Suffering."

Proprietor of a Cattle Company fined $ 200.

The proprietor of the Oriental Cattle Trading Company, a well-known local company, was yesterday fined $ 200 or in default two months' rigorous imprisonment, by Mr. A. C. Boyd, the fourth Police Magistrate, when found guilty of cruelty to sheep.

Mr. V. Bracken, Chief Inspector of the Municipal S.P.C.A., Department, said that while on his rounds on December 9, he inspected the pens of the accused firm at Ginting Lane, off McPherson Road. The pens, however, were empty, but the sheep were in the fields grazing.

In an adjoining field which was partially secluded from public view he saw about 40 sheep which were in an emaciated condition. Most of them were suffering from foot-rot in the early and also the advanced stages. He also found a few suffering from sores on the face and body. He had them transferred to the infirmary, where they were examined by the Assistant Veterinary Surgeon, who confirmed the fact that most of them were suffering from foot-rot and were maggot-bound.

Mr. K. S. Nair, the Assistant Veterinary Surgeon, in his evidence said he was of the opinion that the animals had not been treated, and had probably been in that condition for between 10 to 14 days. He was also of the opinion that the animals had suffered terribly during that period.

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* From 'The Sunday Times' January 15, 1933. Singapore, F. M. S.

Accused's Denial.

The accused M. D. Maricar, said he knew the animals were sick but had been treating them with native medicine. He denied that they were maggot-bound, and had foot-rot.

His Worship turned to him and informed him that he had himself seen the animals and knew the state they were in,

Several other witnesses were brought among whom was a European assistant from Messrs. William Jacks & Co., Ltd., who imported the sheep for the Oriental Cattle Trading Company. He said that it was distinctly understood between the two firms that the sheep, on arrival, were only held by William Jacks as security against payment. Any loss by death or otherwise was borne by the Cattle Company. He also said that the feeding and accommodation, and the general welfare of the sheep was in the hands of the Cattle Company.

His Worship in finding the accused guilty remarked that the sheep had clearly been neglected and allowed to suffer unnecessarily.

The prosecution pointed out before sentence was passed that the accused had a previous conviction for overcrowding sheep in 1931. and had been fined.

11. ANOTHER CASE

Failure to apply treatment to sick cow.

A Bengali named Bazarnath, was brought before Mr. A. W. Hay the second Police Magistrate, yesterday, and pleaded guilty to a charge of cruelty to a sick cow by keeping it for about ten days without medical treatment. Mr. V. Bracken of the Municipal S. P. C. A. Department, said that while on his rounds he saw an emaciated cow in a shed. He examined it and discovered that its right hip joint was dislocated, and there was inflammation of the joint. The left hind leg was deformed, and there were bad sores on both sides of the body.

The Assistant Municipal Veterinary Surgeon examined the cow and was of the opinion that it had been in that condition for about nine days or more.

The accused, when told this, said he had treated the animal with native medicine,

Giving evidence, Mr. K. S. Nair, the Assistant Municipal Veterinary Surgeon, said he examined the cow, but found no signs of treatment.

The accueed was fined $ 25, or one month's rigorous imprisonment.

The cow was destroyed.

HALF STARVED AND UNDERFED. *

There is evidently a direct connection in India between the poverty of the people and that of their cattle. Orissa is an epitome of human poverty. Rai Sahib P. N. Das, Assistant Director, in charge, Orissa Range, Civil Veterinary Department, is thus reported to have spoken at a meeting of the Cuttack Gorakshini Sabha at which he was presiding the other day.

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* From the "*Young India*" *dated* 14-2-29.

" The condition of cattle of Orissa is most deplorable. They keep one dead level of inferiority. They are half starved in dry months and remain underfed during the rest of the year. In short they are mostly a lot of small, weak and emaciated creatures and possess a low degree of vitality and consequently the supply of milk to the people is hopelessly low. There are many people in the villages who have never tasted milk in their life and there are many villages where a chhatak of milk is not available."

"He suggested that in future there should be two sections in such institutions *i.e.*, one for the purpose of giving shelter to the maimed, old and useless animals and the other for the improvement of breeds by adopting up-to-date methods of breeding and rearing."

Enough evidence has been produced in these pages in support of the Rai Sahib's suggestion. Would the trustees of the numerous Gowshallas of the country take to heart the advice given by the speaker.—*M, K. G.* (*Gandhi*).

THE CENTRAL PROVINCES GAZETTE NOTIFICATION.

Dated Nagpur, Saturday, the 4th February, 1933.

No. 349-154-111—Under rule 81 (b) (i) of the Fundamental Rules, leave on average pay for four months, with permission to prefix Sunday to the leave, is granted to Major R. F. Stirling, I.V.S., Director of Veterinary Services, Central Provinces, with effect from the 13th March, 1933.

No. 350-154-111—Rai Sahib R. V. Pillai, Deputy Director of Veterinary Services, Central Provinces, is appointed to officiate as Director of Veterinary Services, Central Provinces, Vice Major R. F. Stirling, proceeding on leave.

By order of the Government.
(*Ministry of Agriculture*).
E. Gordon,
Chief Secretary to Government, Central Provinces

PROCEEDINGS OF THE BUDGET SESSION OF THE LEGISLATIVE COUNCIL, MADRAS, HELD ON 25-3-33, REGARDING THE VETERINARY DEPARTMENT, AS APPEARED IN THE LOCAL PRESS.

When the Council reassembled after lunch to-day the Hon. Mr. P. T. Rajan moved that the Government be granted a sum of Rs. 8,59,600 for demand—civil veterinary services.

Mr. A. B. SHETTY moved to reduce the allotment of Rs. 18,200 for the pay of establishment by Rs. 100 in order to discuss the policy and work of the department. He said that the veterinary department was a very important department of the Government in view of the future material development of the country. Yet that department was being continuously neglected. The provision made for the expenses of that department was being reduced year by year.

The Minister should exert himself and see that the amount allotted for the expenses in the next year's budget was increased. The work of that department was closely related to the development of agriculture. The cultivators were incurring great loss on account of heavy mortality among the cattle. To avoid that loss, more hospitals should be opened. But the provision made for that was very inadequate. There were only 114 hospitals and dispensaries in the Presidency, but the Agricultural Commission had recommended that there should be one veterinary officer for every 25,000 cattle. If that ideal was to be reached, the Government had to employ veterinary assistants six or seven times the present number. There was a scheme that the Government every year should open six new dispensaries and six new touring assistants to be appointed every year. But all those activities had been put a stop to. The Veterinary College was turning out a large number of students every year, but no work was being provided to these students. They naturally went in search of employment to the neighbouring States and Provinces. The Government must find employment for these students. There was need for the opening of more dispensaries in rural areas. Even in the existing hospitals more assistants could be employed and thus increase the value of this department. A new serum institute had been opened but there were not sufficient number of men for doing inoculation work, The Government could also make it obligatory on the bigger municipalities to appoint veterinary assistants. Propaganda work should be carried on in the mofussil.

In conclusion, Mr. Shetty drew attention to the appointment of a special disease investigation officer and appealed to the Minister not to overlook the claims of senior officers in filling that special post. He hoped that the Government would not appoint a junior officer and thus bring about heart-burning among the officers of the department.

The PATTAYAKAR OF PALAYAKOTAI emphasised the importance of adequate measures to prevent cattle disease. which was decimating the livestock in the villages. He pleaded for the establishment of more veterinary hospitals and dispensaries. He said that the Government ought not to charge any fee for the inoculation of cattle.

Mr. K. A. NACHIAPPA GOUNDER said that the Government ought to be progressive and sympathetic in their attitude towards the veterinary department. The dispensaries that were 'axed' last year should be reopened and more should be started in the taluks where they were needed most. As far as possible, they must take the veterinary aid to the very door of the villagers. Then only the veterinary department would get popularised.

Mr. P. V. KRISHNAYYA CHOUDRI said that the veterinary department was not at all popular because there were not a sufficient number of dispensaries. He referred to the needs of the Guntur District in that particular.

Mr. NARASA REDDI appealed to the Minister to redeem the promise of the Government to establish a dispensary in Jammalmadugu.

Mr. PEDDI RAJU also reminded the Government of their promise to start a dispensary at Tadepalligudem.

Mr. V. T. ARASU said that Government should appoint to the department only persons with clinical experience and with experience of the curative side of the work. He mentioned that in reference to the appointment made of a Cattle Diseases Investigating Officer, Mr. BAYABANI SAHEB pleaded for the opening of more veterinary dispensaries all over the Presidency and particularly in the Ceded Districts and for special facilities for Muslim students to join the Veterinary College.

THE MINISTER'S REPLY

The Hon. Mr. P. T. RAJAN, replying said that' the provision for veterinary services made in the present budget was larger than was made last year. The increase was due to the starting of the Serum Institute. The record of the department was not one of expanding activity last year; he hoped that when the finances of the province improved, the record would be far brighter. Some dispensaries were closed last year: but that was done less as a measure of retrenchment than because of the poverty of attendance there. In that connection, he referred to the charge made by some members that urban areas were being favoured with dispensaries and rural areas were neglected, and said that, if any distinction was being made between rural and urban areas, it was in favour of the former. But he must observe that while attendance at the urban dispensaries was satisfactory, some of the rural dispensaries were so poorly attended that they had to be closed down. Suggestions had been made for more touring officers. The department now had about 123 veterinary assistants for that purpose working out at one officer for every two or three taluks. Those were supplemented in times of epidemics among cattle. Some members had stated that touring officers arrived after the epidemic had passed off or taken its full toll. Perhaps, such a thing might have occurred in one or two places; but there were strict instructions issued to the officers to see that the necessary staff were sent immediately to the affected area to cope with the outbreak.

The Hon. Mr. P. T. RAJAN next answered the suggestions made in regard to the Veterinary College. He said that when the College was started, the idea was to train a sufficient number of persons for manning the Government vetrerinary services and also to provide facilities for young men to qualify themselves for setting up private practice. But, he was afraid young men who joined the College did so more or less with a view to securing an appointment under Government. The sooner young men joined the College without that motive or at any rate with their minds clear that Government jobs would not be available for all of them, the better it would be. In that connection, he said it was open to municipalities and local bodies to open out avenues for young men by subsidising them to engage in veterinary work or entertaining them as Veterinary Health Officers. Answering the criticism regarding the appointment of the Cattle Diseases Investigation Officer, he said that a junior had to be appointed because seniors were not willing to take up the job. But the appointment was so made as not to affect the seniority of the men adversely.

Concluding he said that in regard to the departmental activity the main obstacle was the unwillingness of people to take advice; but the department was doing their level best under the circumstances. He promised to consider the several suggestions made by the various members to make the departmental work more effective.

The cut motion was withdrawn and the main demand was then put to the House and passed.

Questions and Answers.

The following were also among the questions put and answered in the Council on Saturday:—

Disease Investigation Officer, Civil Veterinary Department.

Q.—A. B. SHETTY: Will the hon. the Minister for Public Works be pleased to state—(a) whether any nominations have been received by the Government for the post of a Disease Investigation Officer in the Civil Veterinary Department; (b) if so, what their names and qualifications are; and (c) whether seniority and qualifications will be given due consideration in making this appointment?

A.—(a) Yes; (b) the selection of an officer is under consideration and the information cannot, it is regretted, be published at this stage; (c) due consideration is always given to seniority provided special qualifications required for the post are also available in senior men.

Mr. A. B. SHETTY, in a supplemental question asked whether the Government had not selected the 135th man in the list, who had no clinical experience.

The Hon. Mr. RAJAN replied that the appointment had not yet been made.

Q. Will the claims of the senior men who have sufficient laboratory and clinical experience and who have a record of efficient service, be taken into consideration?

A: They are being considered.

Mr. ABDUL HAMEED KHAN: What is the reason in selecting a man who is 135th in the list.

A: The man must possess qualifications which are required by the Government.

Q: What are those qualifications?

A: The qualifications which are necessary for the post of a disease investigation officer.

Q: Are not those qualifications possessed by the other gentlemen?

A: Might; but not to the extent required.

MR. SUBRAMANIA BHAT: Was not a cablegram sent to the candidate to give up his post-graduate study and take charge of the appointment?

A: I am not aware of it.

MR. V. P. NARAYANA NAMBIAR: Is it proposed to make the appointment on a contract basis?

A: This appointment is proposed to be made outside the cadre.

MR. NAMBIAR: Did the Madras Service Commission object to this gentleman being taken on the regular cadre?

A: Notice.

In reply to MR. A. RANGANATHA MUDALIAR, the Minister said that the selection had not been made. The recommendations sent to the Government were under consideration.

MR. POCKER asked whether the Minister had applied his mind to the various qualifications of the candidates and their experience in service.

A: Yes; on the information given by the Head of the Department.

Reviews.

Veterinary Obstetrics and Zootechnics :—By Howard N. Beeman. **Publishers** :—Bailliere, Tindal & Cox, 7 & 8, Henrietta Street, London, W. C. Size 5⅜×8½. Pp, 131. Price 15s. net.

Major Beeman of the U. S. Army Veterinary Corps has enriched the veterinary literature by bringing out an eminently readable book on Obstetrics and Zootechnics. In the small compass of 125 pages the author has been able to present Equine Obstetrics in a concise and lucid manner. It also contains much up-to-date information on the subject.

The author has tried to treat the subject of obstetrics in a scientific chronological order beginning with the basic facts of Obstetrics, Anatomy and Physiology to be followed by the problems incidental to each succeeding period of the cycle of reproduction. We congratulate him on his success he has attained in his endeavour. The usually important section of Dystokia and its handling has been omitted in this book; nor does the author attempt to say anything other than of Equine obstetrics.

The book is divided into three parts. The first part of three chapters deals with Obstetrics, Anatomy, Physiology and Embryology. The second part is the Zootechnics section as is named by the author. The foaling and breeding season-the five chapters of this section contain much useful knowledge to the breeder. It tells him how to handle brood mares and stallions and the care of the sick and healthy foals. The last part has six chapters and deals with the pathology of Pregnancy and Sterility; the perusal of this part by any one will add to his knowledge of Sterility and the Bacteriology of the genital organs.

The printing and get up of the book is on the usual superior style that we have come to associate with the Veterinary publications of Messrs. Bailliere Tindal & Cox.

Here is a book that can guide the breeder and veterinarian and we can confidently recommend it to the profession.—*K. S. N.*

The Milk Supply of Lahore in 1930 :—The Board of Economic Inquiry, Punjab, arranged for an inquiry into the Milk Supply of Lahore in 1930 and deputed Mr. Roshan Lal Anand, M. A., to conduct under the expert supervision of Prof. A. C. Aggarwala, B. Sc., Hons., M. R. C. V. S., Capt., A. I. R. O., of the Punjab Veterinary College.

The fruits of their labour are embodied in the form of a book, which is at once a credit to the authors and a valuable contribution to the existing literature on the milk supply of many an Indian city. The report is a comprehensive survey of the many intricate problems connected with the subject, and includes the following chapters: I. Historical, II. Supply of Milk, III. Demand for Milk, IV. Price of Milk, V. People engaged in the Milk Trade, VI. Milch Cattle and their Feeding, VII. Conclusions. The Appendices to the work include general information about Milk and its Properties, its value as an Article of Diet and the Existing Legislation Regarding Milk Supplies in the Punjab. A copy of the many questionnaires used in the Inquiry is also given at the end.

Problems of the milk supply of Lahore, as are discussed and investigated into, are not peculiar to Lahore alone, but are common to most of the Indian cities, and as such this report is bound to be much appreciated by all interested in the subject, The survey has been conducted with a method and thoroughness that might serve as a model for enquiries of a similar nature in other towns and cities of India. In a country which has more head of cattle than any other in the world, where more than 80 per cent of the people are agriculturists, where annually the task and problem of feeding these immense herds taxes the utmost capacity of their owners, where the economic standard of living is about the lowest in the world, and where the condition of milk supply is as bad as it could be, such educational material should be of immense value. We congratulate the Board for having made provision for conducting an inquiry into a subject of such vital importance to the country and for their choice of the right expert to supervise the inquiry.

Well, it is yet another feather in the cap of our esteemed colleague, Prof Aggarwala, who seems to be out to prove the real worth of a veterinarian, if only opportunities are given him,

The report is printed by the 'Civil and Military Gazette' Press, Lahore, and is priced at Rs. 2 only.

"The Veterinary Bulletin" Vl. 3. No. 1:—As a new journal the beginning of the third volume is of importance in that, as the result of the experience acquired, some consolidation of the general policy with regard to its production has been possible. Volume 1 (1931) was issued in four quarterly numbers. The beginning of a regular monthly issue commenced with Volume 2 (1932). In, volume 3 (1933) they have been able to make slight adjustments in the lay-out pages, resulting in more room for the text, so that a much larger number of of the abstracts covering more references will be included than in the past,

An important feature of the number is the inclusion, in the first twelve pages, of the list of publications to be covered from 1933 onwards for the purpose of selecting references for abstracting in the *Veterinary Bulletin.*

Sreenivasan's Medical Hand-Book:—This is a compilation of useful material for ready reference by Medical practitioners and students. Chapters on Caloric value of food stuffs and their vitamin contents: Incompatiables; Poisons and Antidotes &c., are sure to be appreciated. The 1932 additions to British Pharmacoepea are also included. The book will be helpful to Veterinarians as well. The price of the book is only Rs. 1-8-0. We congratulate the author for so thoughtfully placing a book of this nature in the market and that at such low price. Copies can be had from the Bharath Pharmacy, Pycrofts Road, Triplicane, Madras.

Annual Report of C. V. D. Madras, for 1931-32:—The year was comparatively a healthy one, motality under each head being much less than in previous year. The work turned out both on the preventive and curative sides was on the increase. The absence of 'Circle Reports' is a step in the right direction, materials from which can well be embodied in the Director's reports without making the report voluminous. It is noteworthy that nothing is men, tioned regarding the steps taken to give effect to the recommendations of the Royal Commission on Agriculture. Expansion of the department is at a stand still. Four dispensaries have been closed and six men who were entertained on 1st May 1931, were sent back home on 1st September 1931, as a measure of Retrenchment! We only hope that "even these days will pass off" and that the Director will do his utmost to expand the Department, with the dawn of better times.

Annual Report of C. V. D, Punjab for 1931-32 :—The report as usual records very good work done in all branches of the Civil Veterinary Department, Punjab. The following points in the report need wider publicity for other presidencies to follow :—

(1) A closer net-work of veterinary hospitals is gradually being secured which is increasing the efficiency of the Department for dealing with live-stock work and veterinary aid.

(2) As it is becoming increasingly difficult to absorb all the diplomates of the Punjab Veterinary College into the Department, attempts to find additional spheres of activity for them are being made. The question of absorbing them as Hackney Carriage Inspectors and Cruelty Inspectors under local bodies, and Societies for the Prevention of Cruelty to Animals, respectively is receiving attention.

Annual Administration Reports of the Civil Veterinary Departmant, Bombay Presidency, including the Bombay Veterinary College, the Bombay City and Harbour Veterinary Department and the civil veterinary department in Sind, for the year 1931-32 :—Bombay seems to be still moving slow in the matter of development of the Department. We are at a loss to understand the reason for this. Long before other presidencies thought of Veterinary Science, Bombay had started a College, and Department for it. She has been supplying the necessary staff to start work in other presidencies. But yet she seems to be unwilling to grow ! An attempt has been made towards S. S. inoculation of cattle against Rinderpest. The year was comparatively a healthy year. There is nothing to record either under Research or in the matter of increase of hands and opening of more hospitals.

Obituary.

We regret to record the sad and untimely demise of P. Tyagaraj, G. M. V. C., of the Civil Veterinary Department, Madras, on the 14th of February 1933, after a service of 14 years. He was only 39 years of age and that makes the grief all the more poignant. We offer our heart-felt condolence to the members of the berieved family.

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